AGENDA AMENDED on 4-25-2014

CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE (CTCDC) AGENDA

May 14th from 9:00 am to until Finish, 2014 Meeting
5520 Overland Ave (Conference Center Hearing Room)
San Diego, CA 92123-1239

The Meeting is open, and public/local agencies are invited to attend. For further information regarding this meeting, please contact Devinder Singh at (916) 654-4715, or at Devinder.singh@dot.ca.gov. Electronic copies of this meeting Agenda and minutes of the previous meetings are available at http://www.dot.ca.gov/hq/traffops/signtech/newtech/index.htm

Organization Items

1 Introduction
2 Membership
3 Approval of Minutes of the February 19th & 20th, 2014 Meetings
4 Public Comments

At this time, members of the public may comment on any item not appearing on the agenda. Matters presented under this item cannot be discussed or acted upon by the Committee at this time. For items appearing on the agenda, the public is invited to make comments at the time the item is considered by the Committee. Any person addressing the Committee will be limited to a maximum of five (5) minutes so that all interested parties have an opportunity to speak. When addressing Committee, please state your name, address, and business or organization you are representing for the record.

Agenda Items

5 Public Hearing

Prior to adopting rules and regulations prescribing uniform standards and specifications for all official traffic control devices placed pursuant to Section 21400 of the California Vehicle Code (CVC), the Department of Transportation is required to consult with local agencies and hold public hearings.

14-10	Amendments to various Sections/Figures of Part 7 School Zones of the CA MUTCD 2012 based on Public Comments	(Introduction) (Tong) 9-21
14-05	Adopt Interim Approval issued by the FHWA for Optional Use of a Bicycle Signal Face (1A-16) – Submitted by Caltrans	(Continued) (Tong) 22-31
14-11	Amendments to various Sections/Figures of Part 9 Bicycle Facilities of the CA MUTCD 2012 based on Public Comments	(Introduction) (Tong) 32-40
14-12	Proposal to amend Section 9C.07 of the CA MUTCD 2012, Shared Lane Marking based on Public Comments	(Introduction) (Tong) 41-41
Added 14-15	Proposal to amend Section 6F.87 of the CA MUTCD Rumble Strips in TTC Zones	(Introduction) (Tong) 47-50
Added 14-16	Amendments to various Section/Figures of Part 2 Signs of the CA MUTCD 2012 based on Public Comments	(Introduction) (Tong) 51-68

6 Request for Experimentation

10-3 Experiment with Second Train Warning Sign "Additional Train May Approach" with a Symbol Sign (Submitted by City of Riverside) See Final Report on the following web link: (Continued) (Greenwood)

Note: For Information only, City will present their Report during the future meeting.

http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/reports/Final%20Report%20Additional%20Train%20May%20Approach%20Sign.pdf

7 Discussion Items

14-13 Proposal to amend Section 2B.54 of the CA MUTCD to require the use of blank out No Turn on Red signs at certain intersections where automated photo enforcement is in use (Continued) (Bahadori) 42-43

8 Information Items

14-14 Proposal to amend Section 2H.02 of the CA MUTCD 2012, General Information Signs – Submitted by Caltrans (Introduction) (Tong) 44-45

12-20 FHWA's 2009 MUTCD Revisions 1 and 2 –Engineering Judgment & Compliance dates – Submitted by Caltrans (Continued) (Tong) 46-46

9 Tabled Items

14.02 Proposal to adopt "PRESERVE AMERICA" sign by adding a new Section 2D .104(CA) to the CA MUTCD- Submitted by Tuolumne Co)

14-03 CA MUTCD Illumination policy change on Overhead Guide Signs (Proposal to amend Section 2D.03 and 2E.6) – Submitted by Caltrans

14-06 Proposal to amend Section 7B.15 of the CA MUTCD to define "WHEN CHILDREN ARE PRESENT" sign – Submitted by Caltrans

10 Next Meeting 69

11 Adjourn 69

ITEM UNDER EXPERIMENTATION

09-9 Experiment with Steady Red Stop Line Light (Greenwood)
Status: LADOT prepared a draft evaluation report which indicated that the Steady Red Stop Lights at two intersections did reduce vehicle/bus and vehicle/train conflicts based on the camera surveillance data. However, the "Control Intersections" (locations where no Steady Red Stop Lights were installed) also showed similar improvements. Further analysis of more data will be conducted in the next twelve months.
See report on the following website.
http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/status.htm

09-21 Experiment with Separated/Protected Bikeway (Greenwood)
On the Left Side of Two One-Way Streets in the City of Long Beach (Rte 9-112E)
Status: No new update. See report on the following website.
http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/status.htm

10-3 Experiment with Second Train Warning Sign "Additional Train May Approach" with a Symbol Sign (Submitted by City of Riverside) (Greenwood)

Status: See report on the following website:
http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/reports/Final%20Report%20Additional%20Train%20May%20Approach%20Sign.pdf

11-3 Experiment with Buffered Bicycle Lanes on 2nd St.between Bayshore & PCH in Naples (Greenwood)
Status: No update.

11-12 Experiment with Circular Rapid Flashing Beacon and RRFB (Greenwood)
Status: No update.

11-13 Experiment with a Sign "RECKLESS DRIVING PROHIBITED" (Winter)
Status: (04-09-14) The County of Los Angeles Department of Public Works recently completed its experimental phase of the "Reckless Driving Prohibited" sign and is currently in the process of gathering data from the local law enforcement agencies (United States Forest Service, Los Angeles County Sheriff's Department, and the California Highway Patrol). This data is needed in order to prepare the final report, which is tentatively scheduled to be completed by June 5, 2014. Please forward any future correspondences regarding the experimental sign directly to me. Thank you.

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11-19 Experiment with 2nd advance California Welcome Center Destination Sign (Benton)
Status: No update.

12-9 Request to Experiment with Yellow LED Border on Pedestrian Signal (Benton)
Status: (4-1-2014)
Since the last status update sent to FHWA (and copied to the CTCDC) on January 13, 2014, we have continued to make progress on this experiment. All of the before/after video data has been collected for the 5 intersection study. As noted in previous updates, the amount of video data to review is considerable. The first two intersections completed were studied for seven consecutive days in each scenario (14 days

total). Based on the amount of information gathered from those studies, it was decided that the remaining three intersections would only be reviewed for five consecutive days (10 days total). Here is a summary of where we currently stand at each location:

Intersection	Review Period (Days)	% Complete
Churn Creek Rd/Hartnell Ave	14	100
Shasta Street/ Pine Street	10	60
Eureka Way/Market Street	10	50
Market Street/ Shasta Street	14	100
Market Street/Tehama Street	10	50

The data from the video reviews will be entered into spreadsheets and the results will be presented in the final report. We anticipate completing the final report this summer.

Let me know if you have any questions. Thanks.

_____

Rob Stinger, P.E.
Chief - Traffic Engineering & Operations
Caltrans District 2
530-225-3229

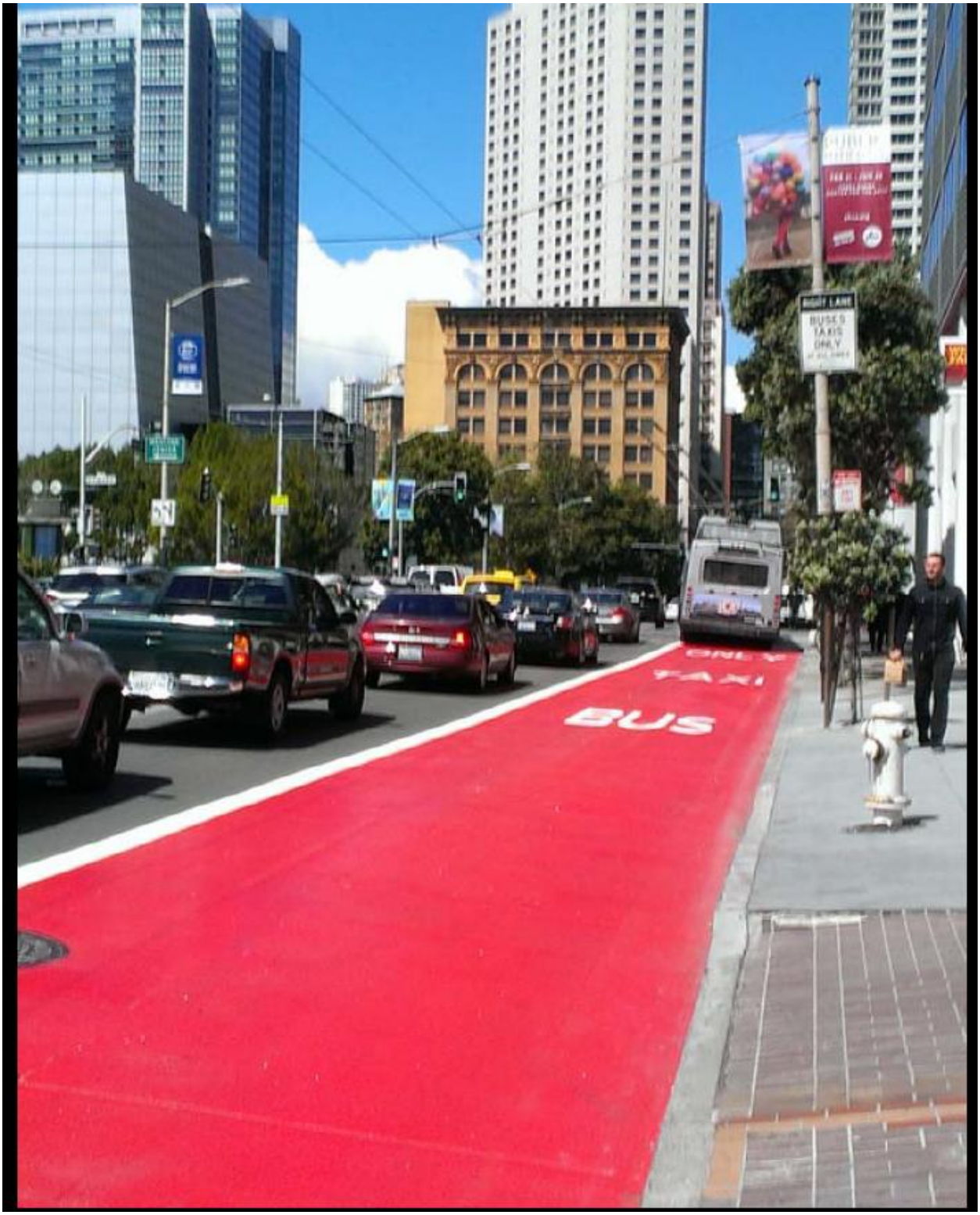
12-18 Request to experiment with Red Colored Transit-only Lanes (SF) (Patterson) **Status: (4-2-14)** In addition to the March 2013 installation of red transit-only lanes on Church Street between 16th Street and Duboce Avenue that we previously reported on, the SFMTA installed red transit-only lanes on 3rd Street between Market and Townsend streets in March 2014 (pictures attached). We used pre-formed thermoplastic on 3rd Street, which

We will compare with the spray-on treatment that was applied on Church Street.
We are planning to complete installations on the following additional corridors over the next two months, and are currently completing the "before" data collection prior to implementation:

- Geary Street between Gough and Market streets
- O'Farrell Street between Gough and Market streets
- Market Street between 5th and 12th streets

We are currently working on a formal evaluation of the Church Street installation, but here are some preliminary findings:

- During peak hours, light rail transit vehicle travel times along the segment of Church Street where red lanes were implemented have been reduced by approximately 10%.
- Controlling for relative levels of congestion, motorist violation rates within the red transit-only lanes on Church Street are about ½ as high as violation rates on Judah Street (another corridor with light rail service and transit-lane lanes that are not red).


TAXI
BUS
BUSES
TAXIS
ONLY

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12-19 Request to Experiment with Highlighted Shared Lane Markings (LA City) (Bahadori)

Status: (3-27-14) On the Highlighted Sharrow Study Los Angeles have conducted the pre-sharrow part of the study but have put the entire experiment on hold pending a letter from the FHWA which is no longer approving experiments using green on bike treatments. The City have been waiting for guidance from Caltrans/CTCDC on how should proceed

12-21 Request to Experiment with In-Roadway Warning Lights (IRWL) System that would supplement existing traffic signals along the Metro Gold Line (LA Metro) (Winter)

Status (1-2-14) • Metro, Los Angeles County DPW and Los Angeles City DOT have each submitted their final comments on the 100% Plans & Specs in December 2013. These plans are expected to be approved in January 2014

• Construction solicitation scheduled for release in February 2014
• Contract award is anticipated in May 2014, pending Metro Board approval.
• Construction to begin in June 2014 and take 3 months to complete.
• Once the illuminated markers are in place, Metro will be preparing bi-annual progress reports to track their performance. This reporting will include a review of their effectiveness at reducing the average monthly number of left-turn violations.

12-25 Request for permission to experiment with various Bicycle Treatments (Winter)
(Santa Monica)
Status: See report on the following website:
http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/exp/city-of-santa-monica-update-bike-ctcdc-buffered-lanes-04-09-2014.pdf

13-01 Request to Experiment with Green & Shared Roadway Bicycle
Markings – Proposed by the City of Oakland (Patterson)
Status: (3-28-14) Milestones:

- Data collection to document the existing condition was completed during the week of Sunday, April 28, 2013.
- Stage #1 construction (installation of standard treatments) was completed on July 19, 2013. This stage included: sharrows, parking edge line stripes (Detail 27B), and "Bicycles May Use Full Lane" (R4-11) signs. Data collection for the Stage #1 condition (standard treatments) was completed over the week ending August 20, 2013.
- Stage #2 construction (installation of the experimental green band) was completed on September 10, 2013. Sharrows were reinstalled on top of the green band by September 15, 2013. Data collection for the Stage #2 condition (experimental treatment) was completed the week ending October 24.
- Data analysis is now underway.

The final phase of data collection was complicated by a strike by transit workers at the Bay Area Rapid Transit District (BART). Data collection occurred from October 17 to October 24. The BART strike occurred from October 18 through October 21. To the extent feasible, data collection was shifted to avoid the strike. However, data collection could not be delayed to the end of October (nor into November) due to earlier sunsets bringing darker conditions to the PM peak period. The bulk of the weekday video data was collected after the strike. However, the total volumes of cyclists and motorists were lower than typical both during and immediately after the strike. This outcome was anticipated given the proximity of the data collection to the MacArthur BART station. The City is considering additional follow-up counts (e.g., one year after) as a means to factor out the effects of the BART strike.

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13-02 Request to Experiment with Bike Boxes and Wide Bike Strip Stripe (Patterson)
-Proposed by the City of Davis
Status :(3-28-14) FHWA did not consider the use of the 12" wide stripe as requiring an experiment.

"The City is not precluded by Figure 9C-3 in the national MUTCD from using a 12-inch longitudinal solid white pavement marking as proposed in your submission. Paragraphs 1, 2 and 6 of Section 3A.06 and Paragraph 20 in Section 3B.04 in the MUTCD allow an agency to currently implement this device as proposed. Thus, the FHWA does not consider this device to be experimental and deletes reference to it in your submission. The City may use it at any time in accordance with the aforementioned applicable provisions and also in accordance with Paragraph 1 of Section 3B.04."
If this is consistent with the CTCDC's perspective, we should update the title of our experiment to only include the bike boxes.

The City of Davis will be installing our bike boxes this spring (May). FHWA has approved the experiment as well. Below is the experiment documentation and reporting protocol. Documentation of existing conditions has been conducted. UC Davis will be assisting the City of Davis with this endeavor.

"Evaluation of the experiment would begin the first week after installation. Observations of the Bike Box experiments on B Street and A Street will be conducted at two peak times (Morning / Evening) one day a week for two months (Wednesdays). Each observation session will be one-hour in duration. Following the first two months of the experiment, observations will be decreased to one day a month for the remaining 10 months of the experiment (3rd Wednesday of week). It is hypothesized that the first two months of the experiment will be the most critical in terms of gathering data related to bicycle & motorist behavior. It is anticipated that after the facility has been installed for a couple of months the rate of potential conflicts will decrease due to learned behavior and an increased user knowledge of how the facility functions."
Submitted by David Kemp

14-10 Amendments to various Sections of Part 7 School Areas of the CA MUTCD 2012

Recommendation: Caltrans requests that the CTCDC make recommendations for the adoption of the Part 7 Sections as amended under the proposal.

Requesting: Initiated due to the Public Comments submitted during the MUTCD 2009 Revision

Sponsoring Agency: Caltrans

Background: Proposed amendments are based on the comments made by individuals during the CA MUCTD 2012 adoption process. The submitted comments were reviewed by Caltrans staff and the comments on which Caltrans Staff was agreed are placed on the agenda for the CTCDC review and for recommendations. CTCDC Workshop was not held on the Part 7 public comments. The changes are summarized on the following table and shown on the following pages.

Proposal:

#	CA MUTCD	CA MUTCD/	Public Comments	Commenter	Caltrans
	Section/Figure	AgendaPage#			Response
1	Sec 7A.03	1257/10	District 4 want to add the following language: "The devices and treatments described herein are for the use in school zones and do not preclude the use of other devices and treatments described elsewhere in this document."	Caltrans D4	agree
2	Figure 7A-1	1258/11	Suggested to add "Pedestrian" before "Route" to the Fig. Heading	Jessica Meaney, Safe Rte to School	agree
3	Sec 7B.03	1259/12	For Example of Location of school area signs, "add Figures 7B-4, 7B-5 & 7B-5(CA)	Dean R Lehman, Deputy Director, Amundson, Quintana	agree
4	Sec 7B.08	1260/13	Delete "photo radar Systems" not allowed in CA	City of San Jose	agree
					agree
5	Sec 7B.12	1263/14	Standard paragraph 2, "change signalized locations to controlled locations"	City of San Jose	agree
					agree
6	Sec 7B.15	1263/14	Standard 1, paragraph 3, include "speed limit (R2-1) sign as an alternative to using the END SHOOL SPEED LIMIT sign"	City of San Jose	agree
					agree
7	Sec 7B.15	1264/15	Under Option add sign code "R2-1" after the speed limit	City of San Jose	agree
8	Sec 7B.15	1265 & 1266/16 & 17	Extended 25 MPH and or Reduced Speeds in School Zones Reduced Speed limit in school zones says 15 mph and 25 mph, clarify if 20 mph can be considered	City of San Jose and Various public agencies	agree
9	Figure 7B-5, 7B-5(CA),	1273&1274/18 & 19	Delete Optional and add OR between R2-1 and S5-3	City of San Jose and other agencies	agree
10	Figure 7B-102(CA)	1277/20	Shoe Flashing Beacon top of the sign and show mirror image of SW3-2(CA)	City of San Jose and other agencies	agree
11	Figure 7B-103(CA)	1278/21	Add R2-1 or S5-3 and show option to use 20 MPH	City of San Jose and other agencies	agree
Note: There were more comments on the Part 7, Traffic Control for School Areas, Head Quarter Traffic Engineering satff					
does not agree with those comments. If an agency or individual strongly believes that his/her comments need to be incorporated ,					
they can pursue changes by initiating a CTCDC agenda item for the full Committee's hearing.					

B. Section 627 – Engineering and Traffic Survey.
C. Section 21102 – Local Authority to Close Streets.
D. Section 21368 – Crosswalks Near Schools.
E. Section 21372 – Guidelines for Traffic Control Devices Near Schools.
F. Section 21373 – School Board Request for Traffic Control Devices.
G. Section 21458 – Curb Markings.
H. Section 21949 through 21971 – Pedestrians' Rights and Duties.
I. Section 22350 – Basic Speed Law.
J. Section 22352 – Prima Facie Speed Limits.
K. Section 22358.4 – Decrease of Local Limits Near Schools or Senior Centers.
L. Section 22504 – Unincorporated Area Parking; School Bus Stops.
M. Section 40802 – Speed Traps.
N. Section 42200 – Disposition by Cities and Other Local Entities.
O. Section 42201 – Disposition by County.

Section 7A.03 School Crossing Control Criteria

Support:

01 The frequency of gaps in the traffic stream that are sufficient for student crossing is different at each crossing location. When the delay between the occurrences of adequate gaps becomes excessive, students might become impatient and endanger themselves by attempting to cross the street during an inadequate gap. In these instances, the creation of sufficient gaps needs to be considered to accommodate the crossing demand.

02 A recommended method for determining the frequency and adequacy of gaps in the traffic stream is given in the "Traffic Control Devices Handbook" (see Section 1A.11).

03 Properly conducted engineering and traffic studies will determine the appropriate measures to be developed at school crossings. The devices and treatments described herein are for the use in school zones and do not preclude the use of other devices and treatments described elsewhere in this document. Types of school pedestrian measures that can be considered can include:

A. Warning signs and markings.
B. School speed limits.
C. Intersection stop signs.
D. Flashing yellow beacons.
E. Traffic signals.
F. Pedestrian Hybrid Beacons.
G. Remove visibility obstructions.
H. School Safety Patrol.
I. Adult Crossing Guard.
J. Pedestrian separation structures.
K. Pedestrian walkways along the roadway.
L. Pedestrian walkways separated from the roadway.
M. Parking controls and curb-use zones.
N. Bus transportation.

Section 7A.04 Scope

Standard:

01 **Part 7 sets forth basic principles and prescribes standards that shall be followed in the design, application, installation, and maintenance of all traffic control devices (including signs, signals, and markings) and other controls (including adult crossing guards) required for the special pedestrian conditions in school areas.**

Support:

02 Sections 1A.01 and 1A.08 contain information regarding unauthorized devices and messages. Sections 1A.02 and 1A.07 contain information regarding the application of standards. Section 1A.05 contains information regarding the maintenance of traffic control devices. Section 1A.08 contains information regarding placement

assistance that is available to jurisdictions that do not have engineers on their staffs who are trained and/or experienced in traffic control devices.

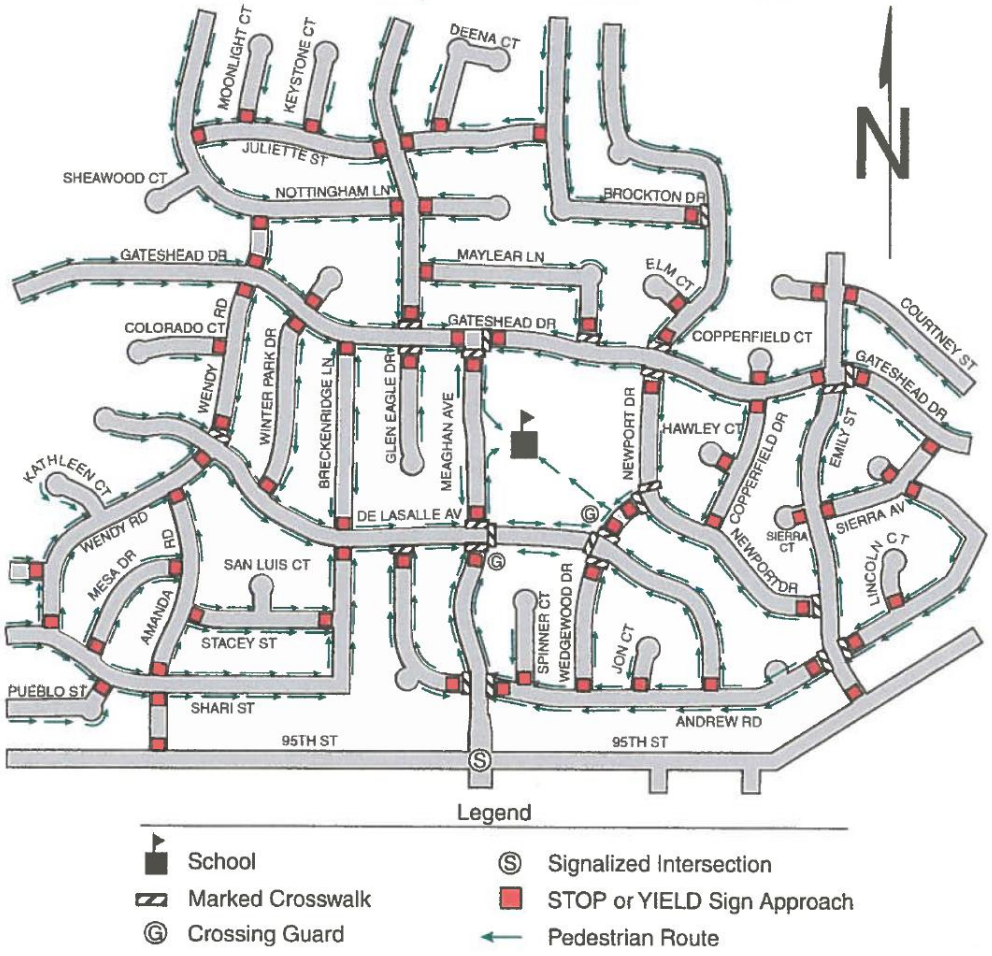
03 Provisions contained in Chapter 2A and Section 2B.06 are applicable in school areas.

04 Part 3 contains provisions regarding pavement markings that are applicable in school areas.

05 Part 4 contains provisions regarding highway traffic signals that are applicable in school areas. The School Crossing signal warrant is described in Section 4C.06.

Figure 7A-1. Example of School Pedestrian Route Plan Map

~~Figure 7A-1. Example of School Route Plan Map~~



CHAPTER 7B. SIGNS

Section 7B.01 Size of School Signs

Standard:

01 **Except as provided in Section 2A.11, the sizes of signs and plaques to be used on conventional roadways in school areas shall be as shown in Table 7B-1 and 7B-1(CA).**

02 **The sizes in the Conventional Road column shall be used unless engineering judgment determines that a minimum or oversized sign size would be more appropriate.**

03 **The sizes in the Minimum column shall be used only where traffic volumes are low and speeds are 30 mph or lower, as determined by engineering judgment.**

04 **The sizes in the Oversized column shall be used on expressways.**

Guidance:

05 *The sizes in the Oversized column should be used on roadways that have four or more lanes with posted speed limits of 40 mph or higher.*

Option:

06 The sizes in the Oversized column may also be used at other locations that require increased emphasis, improved recognition, or increased legibility.

07 Signs and plaques larger than those shown in Table 7B-1 may be used (see Section 2A.11).

Standard:

08 **The standard sign dimensions prescribed in this California MUTCD, FHWA's "Standard Highway Signs and Markings" book and Department of Transportation's California Sign Specifications shall be used unless engineering judgment determines that other sizes are appropriate. Where engineering judgment determines that sizes smaller than the standard dimensions are appropriate for use, the sign dimensions shall not be less than the minimum dimensions specified in this California MUTCD, "Standard Highway Signs and Markings" book or the Department of Transportation's California Sign Specifications. See Section 1A.11 for information regarding these publications.**

Section 7B.02 Illumination and Reflectorization

Standard:

01 **The signs used for school area traffic control shall be retroreflectorized or illuminated.**

Section 7B.03 Position of Signs

Support:

01 Sections 2A.16 and 2A.17 contain provisions regarding the placements and locations of signs.

02 Section 2A.19 contains provisions regarding the lateral offsets of signs.

02a Examples of location of school area signs and California School Assemblies for typical installations are shown in Figures 7B-1(CA), 7B-4, 7B-5 and 7B-5(CA).

Option:

03 In-roadway signs for school traffic control areas may be used consistent with the requirements of Sections 2B.12, ~~7B.08~~, 7B.11 and 7B.12.

Section 7B.04 Height of Signs

Support:

01 Section 2A.18 contains provisions regarding the mounting height of signs.

Section 7B.05 Installation of Signs

Support:

01 Section 2A.16 contains provisions regarding the installation of signs.

02 Examples of school area signing, markings, flashing beacons and overhead school signs are shown in Figures 7B-1(CA), 7B-5(CA), 7B-4 through 7B-6 and Figures 7B-101(CA) through 7B-104(CA).

Section 7B.06 Lettering

Support:

01 The "Standard Highway Signs and Markings" book (see Section 1A.11) contains information regarding sign lettering.

Section 7B.07 Sign Color for School Warning Signs

Standard:

01 **School warning signs, ~~including the "SCHOOL" portion of the School Speed Limit (S5-1) sign and~~ including any supplemental plaques used in association with these warning signs, shall have a fluorescent yellow-green background with a black legend and border unless otherwise provided in this Manual for a specific sign.**

Section 7B.08 School Advance Warning Assembly (S1-1 with Supplemental Plaque)

Support:

01 Many state and local jurisdictions find it beneficial to advise road users that they are approaching a school that is adjacent to a highway, where additional care is needed, even though no school crossing is involved and the speed limit remains unchanged. Additionally, some jurisdictions designate school zones that have a unique legal standing in that fines for speeding or other traffic violations within designated school zones are increased or special enforcement techniques ~~such as photo radar systems~~ are used. It is important and sometimes legally necessary to mark the beginning and end points of these designated school zones so that the road user is given proper notice.

02 The School (S1-1) sign (see Figure 7B-1 or 7B-1(CA)) has the following four applications:

A. School Area – the S1-1 sign can be used to warn road users that they are approaching a school area that might include school buildings or grounds, a school crossing, or school related activity adjacent to the highway.
B. School Zone – the S1-1 sign can be used to identify the location of the beginning of a designated school zone (see Section 7B.09).
C. School Advance Crossing – if combined with an AHEAD (W16-9P) plaque or an XX FEET (W16-2P or W16-2aP) plaque to comprise the School Advance Crossing assembly, the S1-1 sign can be used to warn road users that they are approaching a crossing where schoolchildren cross the roadway (see Section 7B.11).
D. School Crossing – if combined with a diagonal downward pointing arrow (W16-7P) plaque to comprise the School Crossing assembly, the S1-1 sign can be used to warn approaching road users of the location of a crossing where schoolchildren cross the roadway (see Section 7B.12).

02a The School Assemblies A(CA) through E(CA) are shown in Figure 7B-1(CA) and Table 7B-1(CA).

Option:

03 If a school area is located on a cross street in close proximity to the intersection, a School (S1-1) sign with a supplemental arrow (W16-5P or W16-6P) plaque may be installed on each approach of the street or highway to warn road users making a turn onto the cross street that they will encounter a school area soon after making the turn.

Section 7B.09 School Zone Sign (S1-1) and Plaques (S4-3P, S4-7P) and END SCHOOL ZONE Sign (S5-2)

Standard:

01 **If a school zone has been designated under State or local statute, a School (S1-1) sign (see Figure 7B-1 or 7B-1(CA)) shall be installed to identify the beginning point(s) of the designated school zone ~~(see Figure 7B-2)~~.**

Option:

02 A School Zone (S1-1) sign may be supplemented with a SCHOOL (S4-3P) plaque (see Figure 7B-1 or 7B-1(CA)).

03 ~~A School Zone (S1-1) sign may be supplemented with an ALL YEAR (S4-7P) plaque (see Figure 7B-1) if the school operates on a 12-month schedule.~~

Standard:

07 **If an In-Street Pedestrian Crossing sign, an In-Street Schoolchildren Crossing sign, or a reduced size in-street School (S1-1) sign is placed in the roadway, the sign support shall comply with the mounting height and special mounting support requirements for In-Street Pedestrian Crossing (R1-6 ~~or R1-6a~~) signs (see Section 2B.12).**

08 **The In-Street Pedestrian Crossing sign, the In-Street Schoolchildren Crossing sign, the Overhead Pedestrian Crossing sign, and the reduced size in-street School (S1-1) sign shall not be used at ~~signalized~~ controlled locations.**

Section 7B.13 School Bus Stop Ahead Sign (S3-1)

Guidance:

01 *The School Bus Stop Ahead (S3-1) sign (see Figure 7B-1 or 7B-1(CA)) should be installed in advance of locations where a school bus, when stopped to pick up or discharge passengers, is not visible to road users for an adequate distance and where there is no opportunity to relocate the school bus stop to provide adequate sight distance.*

Standard:

02 **The School Bus Stop Ahead (S3-1) sign shall be installed in advance of an approved school bus stop where there is not a clear view in advance of the stop from a distance of 200 feet. Refer to CVC 22504(c).**

Section 7B.14 SCHOOL BUS TURN AHEAD Sign (S3-2)

Option:

01 The SCHOOL BUS TURN AHEAD (S3-2) sign (see Figure 7B-1 or 7B-1(CA)) may be installed in advance of locations where a school bus turns around on a roadway at a location not visible to approaching road users for a distance as determined by the "0" column under Condition B of Table 2C-4, and where there is no opportunity to relocate the school bus turn around to provide the distance provided in Table 2C-4.

Section 7B.15 School Speed Limit Assembly (S4-1P, S4-2P, S4-3P, S4-4P, S4-6P, S5-1) and END SCHOOL SPEED LIMIT Sign (S5-3)

Standard:

01 **A School Speed Limit ~~assembly~~ Assembly C(CA) (see Figure ~~7B-1~~ 7B-1(CA)) ~~or a School Speed Limit (S5-1) sign (see Figure 7B-1)~~ shall be used to indicate the speed limit where a reduced school speed limit zone has been established based upon an engineering study or where a reduced school speed limit is specified for such areas by statute. The School Speed Limit ~~assembly~~ Assembly C(CA) or School Speed Limit sign shall be placed at or as near as practical to the point where the reduced school speed limit zone begins (see Figures ~~7B-3 and~~ 7B-5).**

02 **If a reduced school speed limit zone has been established, a School (S1-1) sign shall be installed in advance (see Table 2C-4 for advance placement guidelines) of the first School Speed Limit sign assembly ~~or S5-1 sign~~ that is encountered in each direction as traffic approaches the reduced school speed limit zone (see Figures ~~7B-3 and~~ 7B-5).**

03 ~~**Where increased fines are imposed for traffic violations within a reduced school speed limit zone, a FINES HIGHER (R2-6P), FINES DOUBLE (R2-6aP), or $XX FINE (R2-6bP) plaque (see Figure 2B-3) shall be installed as a supplement to the reduced school speed limit sign to notify road users.**~~

04 ~~**Except as provided in Paragraph 5, the**~~ **The downstream end of an authorized and posted reduced school speed limit zone shall be identified with an END SCHOOL SPEED LIMIT (S5-3) or Speed Limit (R2-1) sign (see Figures 7B-1, 7B-1(CA) and 7B-5).**

Option:

05 ~~If a reduced school speed limit zone ends at the same point as a higher fines zone, an END SCHOOL ZONE (S5-2) sign may be used instead of a combination of an END HIGHER FINES ZONE (R2-11) sign and an END SCHOOL SPEED LIMIT (S5-3) sign.~~

06 A standard Speed Limit sign showing the speed limit for the section of highway that is downstream from the authorized and posted reduced school speed limit zone may be mounted on the same post above the END

SCHOOL SPEED LIMIT (S5-3) sign ~~or the END SCHOOL ZONE (S5-2) sign~~ or the Speed Limit (R2-1)sign may be posted by itself (see Figure 7B-5(CA) and 7B-102(CA)).

~~*Guidance:*~~

07 ~~*The beginning point of a reduced school speed limit zone should be at least 200 feet in advance of the school grounds, a school crossing, or other school related activities; however, this 200 foot distance should be increased if the reduced school speed limit is 30 mph or higher.*~~ Refer Figures 7B-1(CA), 7B-5, 7B-5(CA), and 7B-101(CA) through 7B-103(CA).

Standard:

08 **The School Speed Limit ~~assembly~~ Assembly C(CA) shall be either a fixed-message sign assembly or a changeable message sign.**

09 **The fixed-message School Speed Limit ~~assembly~~ Assembly C(CA) shall consist of a top plaque (S4-3P) with the legend SCHOOL, a Speed Limit (R2-1) sign, and a bottom plaque WHEN CHILDREN ARE PRESENT ~~(S4-1P, S4-2P, S4-4P, or S4-6P) indicating the specific periods of the day and/or days of the week that the special school speed limit is in effect~~ (see Figure ~~7B-1~~ 7B-1(CA)).**

Option:

10 Changeable message signs (see Chapter 2L and Section 6F.60) may be used to inform drivers of the school speed limit. If the sign is internally illuminated, it may have a white legend on a black background. Changeable message signs with flashing beacons may be used for situations where greater emphasis of the special school speed limit is needed.

Guidance:

11 *Even though it might not always be practical because of special features to make changeable message signs conform in all respects to the standards in this Manual for fixed-message signs, during the periods that the school speed limit is in effect, their basic shape, message, legend layout, and colors should comply with the standards for fixed-message signs.*

12 *A confirmation light or device to indicate that the speed limit message is in operation should be considered for inclusion on the back of the changeable message sign.*

Standard:

13 **Fluorescent yellow-green pixels shall be used when the "SCHOOL" message is displayed on a changeable message sign for a school speed limit.**

Option:

14 Changeable message signs may use blank-out messages or other methods in order to display the school speed limit only during the periods it applies.

15 Changeable message signs that display the speed of approaching drivers (see Section 2B.13) may be used in a school speed limit zone.

16 ~~A Speed Limit Sign Beacon (see Section 4L.04) also may be used, with a WHEN FLASHING legend, to identify the periods that the school speed limit is in effect.~~

Standard:

17 **The School Speed Limit Assembly C(CA) shall be used on streets with speed limits greater than 25 mph that are contiguous to a school building or school grounds.**

Support:

18 The School Speed Limit Assembly C(CA) is shown in Figure 7B-1(CA).

Option:

19 If used, the School Speed Limit Assembly C(CA) may be posted up to 500 feet in advance of the school boundary.

Standard:

20 **The "WHEN FLASHING" and specific time period messages shall not be used in school areas in California as they are not supported by CVC 22352. Hence, the Specific Time Period Plaque (S4-1P), WHEN FLASHING (S4-4P) and SCHOOL SPEED LIMIT 20 WHEN FLASHING (S5-1) signs shall not be used in California.**

Support:

21 The "WHEN FLASHING" message is misleading because it suggests that the speed limit is in force only when the flashing beacons are in operation. The prima facie speed limit of 25 mph is in effect based on the presence of children per CVC 22352, not on the operation of the flashing beacons.

22 The non-use of "WHEN FLASHING" message also addresses the situation when children are present but the flashing beacons are inoperative for any reason.

23 The non-use of "WHEN FLASHING" message does not alter the warrants or the use of a flashing yellow beacon or its effectiveness as an attention-getting device.

24 The specific time period message is misleading because it suggests that the speed limit is in force only during the time period specified. The prima facie speed limit of 25 mph is in effect based on the presence of children per CVC 22352, not on the time period specified.

EXTENDED 25 MPH AND/OR REDUCED SPEEDS IN SCHOOL ZONES

Option:

25 A local authority may declare a 20 or 15 mph prima facie speed limit within 500 feet of a school building or school grounds and an extended 25 mph prima facie speed limit within 500 to 1000 feet from a school or school grounds.

Support:

26 The extended 25 mph school speed zone can provide a progressive speed reduction.

Standard:

27 **If the local authority declares by ordinance or resolution the above prima facie speed limits, all of the following criteria shall be met:**

A. **Street (or highway) is in a residential district.**
B. **Street (or highway) outside of a school zone has a posted speed limit no greater than 30 mph.**
C. **Street (or highway) has no more than a total of two through traffic lanes (one in each direction or two in one direction).**
D. **The reduced school zone speed limit of 20 or 15 mph is within 500 feet of school grounds.**
E. **The extended school zone speed limit of 25 mph is within 500 to 1000 feet of school grounds.**

28 **When used, a local ordinance or resolution adopted to establish a 20 or 15 mph reduced school zone speed limit and/or an extended 25 mph school zone speed limit shall not be effective until School Speed Limit Assembly C (CA) giving notice of the speed limit(s) is erected upon the highway.**

29 **On a State highway, the ordinance or resolution shall not be effective until the ordinance or resolution has been approved by the Department of Transportation and appropriate school zone speed signs are erected upon the State highway.**

30 **For purposes of a 20 or 15 mph reduced prima facie speed limit, School Speed Limit Assembly C (CA) indicating a speed limit of 20 or 15 mph shall be placed at a distance up to 500 feet away from school grounds. For purposes of an extended 25 mph prima facie speed limit, School Speed Limit Assembly C (CA) indicating a speed limit of 25 mph shall be placed at any distance between 500 to 1,000 feet away from school grounds. Refer to Figure 7B-103(CA).**

31 **The established school speed limits shall be effective when children are going to or leaving the school, either during school hours or during the noon recess hour. The school speed limits shall also apply when the school grounds are not separated from the highway by a fence, gate, or other physical barrier while the grounds are in use by children (this condition can apply at any time of day or any day of the week).**

32 **The determination to reduce a prima facie speed limit to 20 or 15 mph and/or extend a 25 mph school zone speed limit, as described above, shall be documented in writing, in an engineering study. The engineering study shall identify the provisions of Section 627 of the Vehicle Code that support the reduced and/or extended school zone speed limit(s).**

Guidance:

33 *When preparing an engineering study pursuant to the Standard above, the local authority should cite all elements of an Engineering and Traffic Survey, as discussed in Section 627 of the Vehicle Code, that support the need for a reduced speed limit of 20 or 15 mph and/or an extended 25 mph school zone speed limit.*

Support:

34 The documentation of prevailing speeds found in CVC Section 627 can be used to establish an existing speed profile for the school zone, but the 85th percentile speed is not used to set the reduced or extended school speed limit.

Standard:

35 **The local authority shall reimburse the Department of Transportation for all costs incurred by the Department under this section.**

Section 7B.16 Reduced School Speed Limit Ahead Sign (S4-5, S4-5a)

Guidance:

01 *A Reduced School Speed Limit Ahead (S4-5, S4-5a) sign (see Figure 7B-1 or 7B-1(CA)) should be used to inform road users of a reduced speed zone where the speed limit is being reduced by more than 10 mph, or where engineering judgment indicates that advance notice would be appropriate* for the School Advance Warning Assembly D(CA).

Standard:

02 **If used, the Reduced School Speed Limit Ahead sign shall be followed by ~~a School Speed Limit sign or~~ a School Speed Limit ~~assembly~~ Assembly C(CA).**

03 **The speed limit displayed on the Reduced School Speed Limit Ahead sign shall be identical to the speed limit displayed on the subsequent School Speed Limit sign or School Speed Limit ~~assembly~~ Assembly C(CA).**

EXTENDED 25 MPH AND/OR REDUCED SPEEDS IN SCHOOL ZONES

~~Option:~~ Guidance

04 For school area traffic control with a reduced school zone speed limit of 15 mph and/or an extended school zone speed limit of 25 mph in a residential district, the Reduced Speed School Zone Ahead (S4-5, S4-5a) sign ~~may~~ should be used to give advance notice of a reduced 15 mph school zone speed limit and/or an extended school zone speed limit of 25 mph.

Option:

04 For school area traffic control with a reduced school zone speed limit of 20 mph and/or an extended school zone speed limit of 25 mph in a residential district, the Reduced Speed School Zone Ahead (S4-5, S4-5a) sign may be used to give advance notice of a reduced 20 mph school zone speed limit and/or an extended school zone speed limit of 25 mph.

Section 7B.17 Parking and Stopping Signs (R7 and R8 Series)

Option:

01 Parking and stopping regulatory signs may be used to prevent parked or waiting vehicles from blocking pedestrians' views, and drivers' views of pedestrians, and to control vehicles as a part of the school traffic plan.

Support:

02 Parking signs and other signs governing the stopping and standing of vehicles in school areas cover a wide variety of regulations. Typical examples of regulations are as follows:

A. No Parking X:XX AM to X:XX PM School Days Only,
B. No Stopping X:XX AM to X:XX PM School Days Only,
C. XX Min Loading X:XX AM to X:XX PM School Days Only, and
D. No Standing X:XX AM to X:XX PM School Days Only.

03 Sections 2B.46, 2B.47, and 2B.48 contain information regarding the signing of parking regulations in school zone areas.

04 Street closures are authorized by local ordinance or resolution on streets crossing or dividing school grounds when necessary for the protection of persons attending the school. Refer to CVC 21102.

Figure 7B-5. Example of Signing for a School Zone with a School Speed Limit and a School Crossing

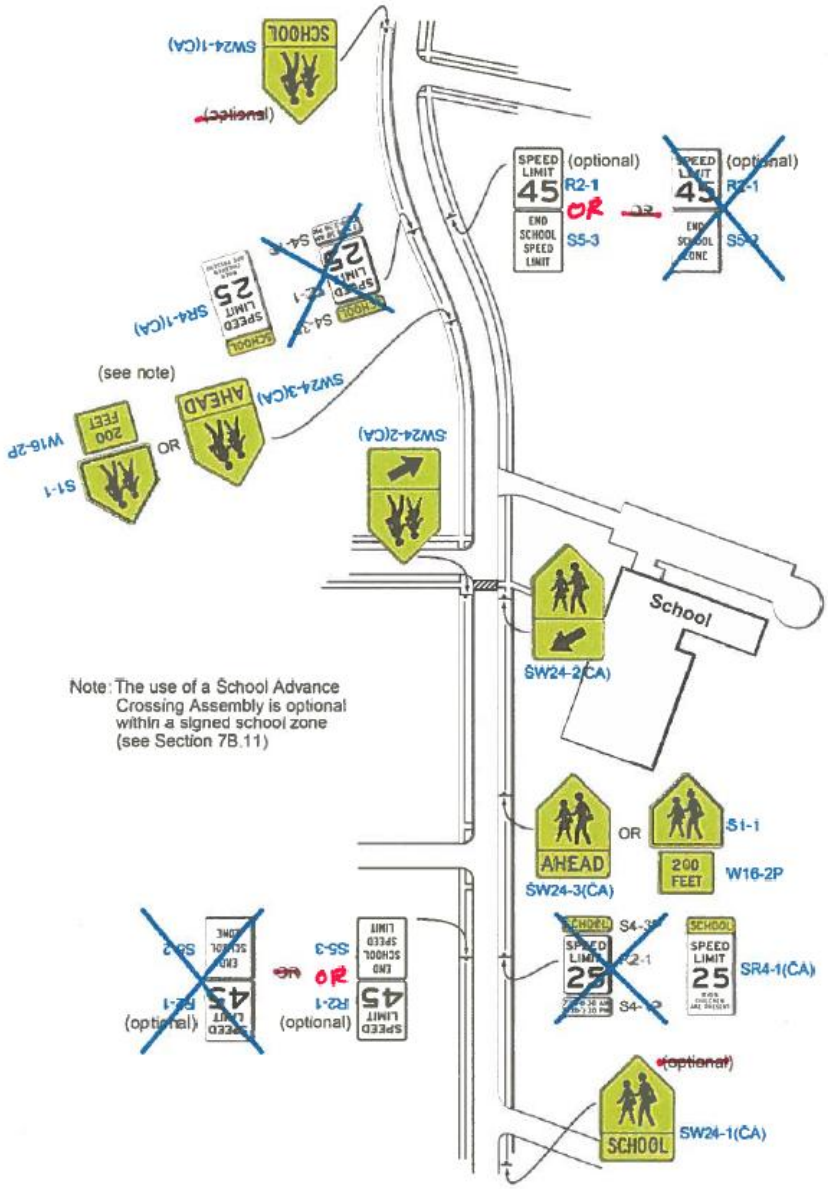


Figure 7B-5(CA). Example of Signing for a School Zone with a School Speed Limit and a School Crossing

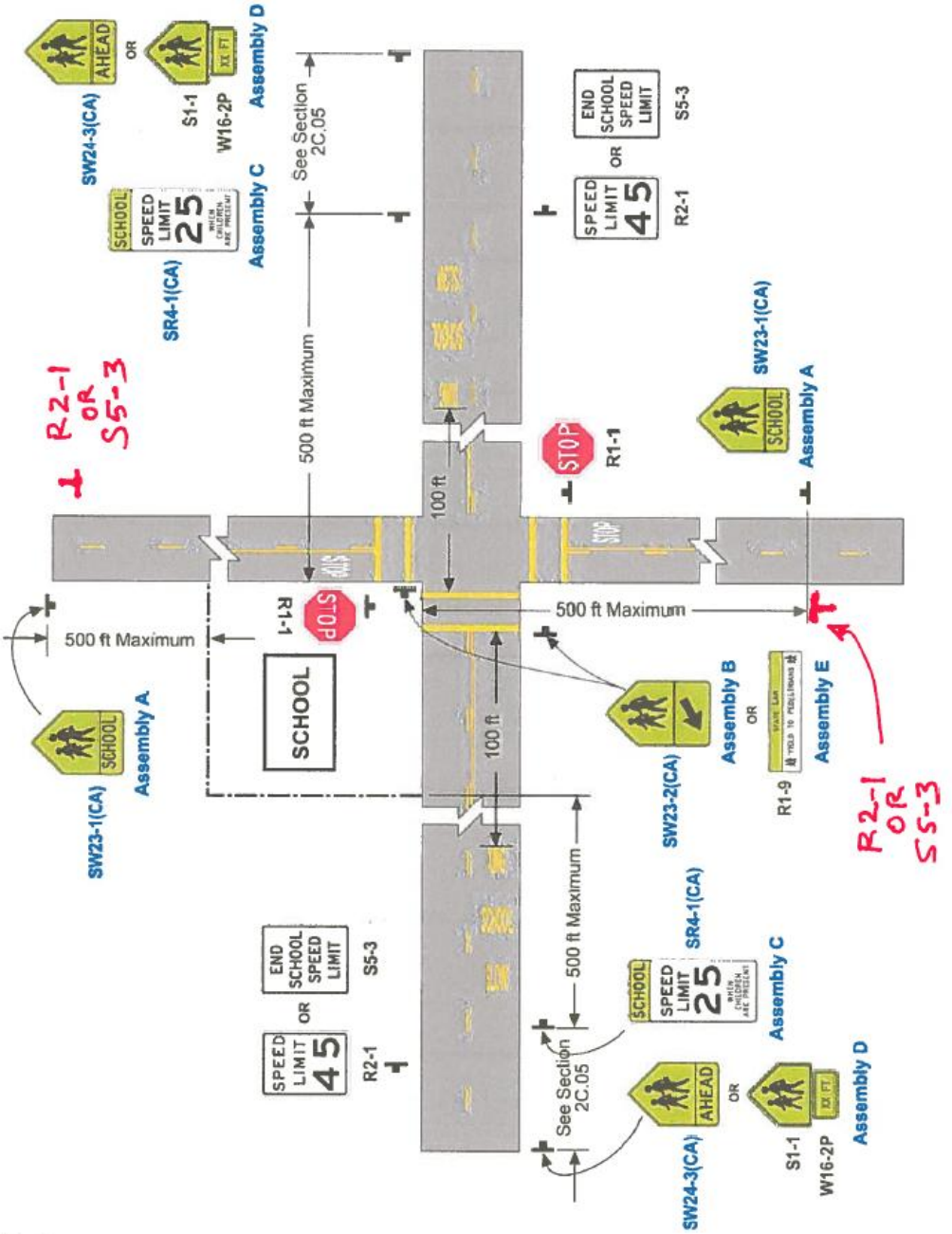


Figure 7B-102 (CA). Example of Signing for Traffic Control in School Areas with Flashing Yellow Beacons

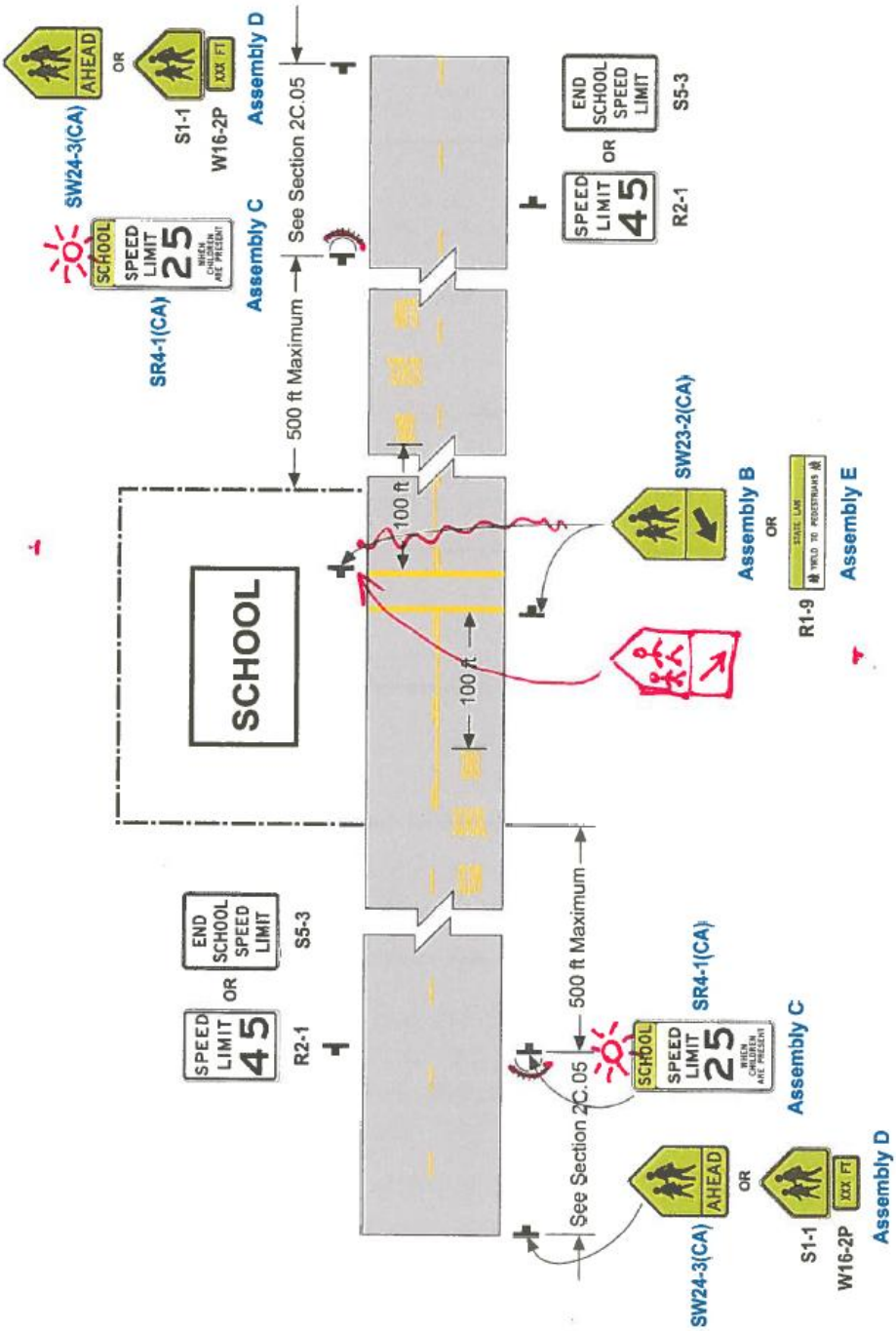
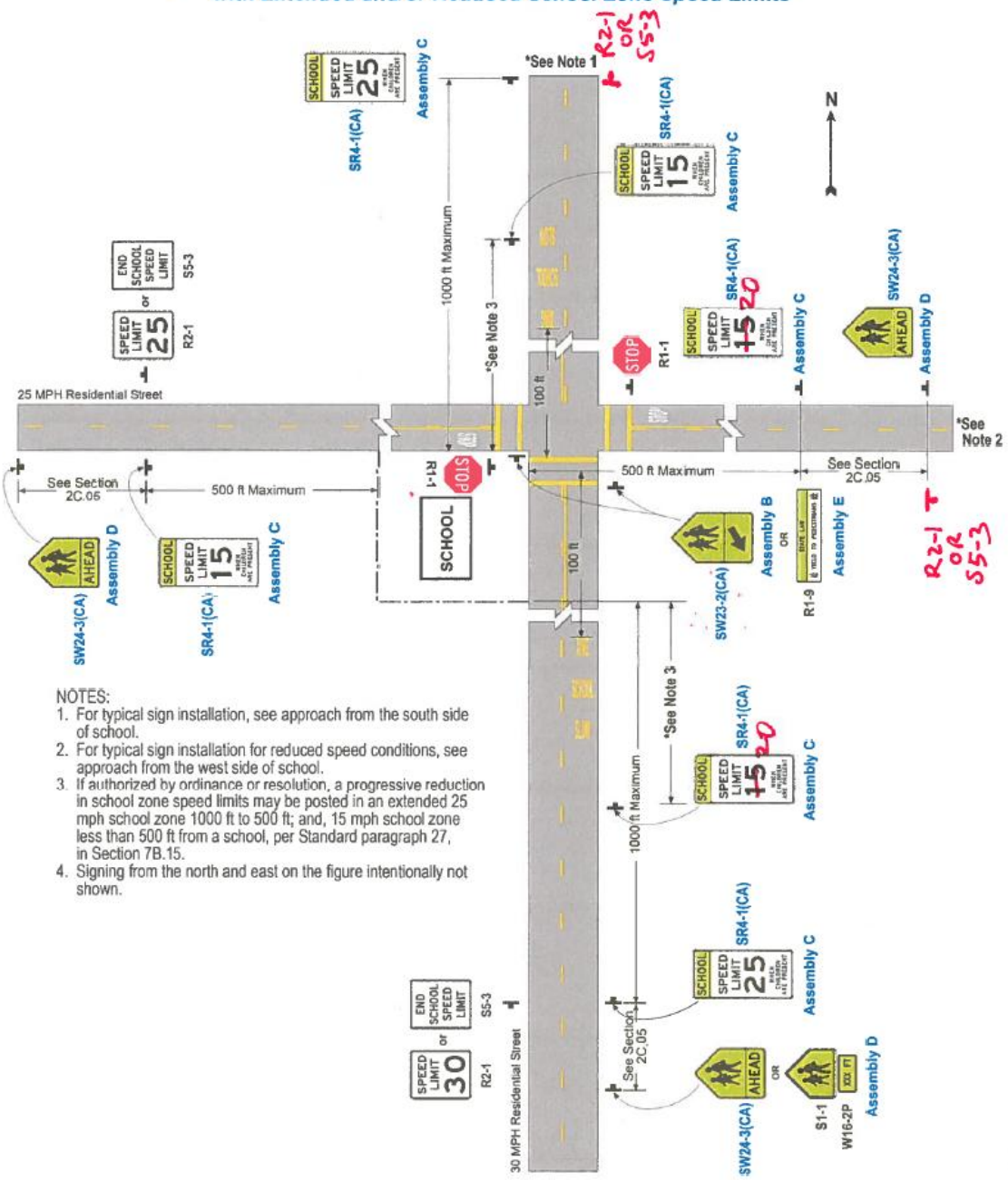


Figure 7B-103(CA). Example of Signing for School Area Traffic Control with Extended and/or Reduced School Zone Speed Limits



NOTES:
1. For typical sign installation, see approach from the south side of school.
2. For typical sign installation for reduced speed conditions, see approach from the west side of school.
3. If authorized by ordinance or resolution, a progressive reduction in school zone speed limits may be posted in an extended 25 mph school zone 1000 ft to 500 ft; and, 15 mph school zone less than 500 ft from a school, per Standard paragraph 27, in Section 7B.15.
4. Signing from the north and east on the figure intentionally not shown.

14-05 Adopt Interim Approval issued by the FHWA for Optional Use of a Bicycle Signal Face (1A-16)

Recommendations: Caltrans request that the Committee make recommendations to seek statewide blanket approval for Optional Use of a Bicycle Signal Face (1A-16) for all the local agencies of California.
Requesting and Sponsor Agency: Caltrans
Background: During the February 19th, 2014 CTCDC meeting, California Bicycle Advisory Committee (CBAC) asked to defer this item for the next meeting, because they are working on a proposed language for the California MUTCD. I have not received any recommendation from CBAC on this item. Caltrans wants the committee to take action during the May 14th, meeting.
FHWA IA Memo:

U.S. Department of Transportation
Federal Highway Administration

Memorandum

Subject: **INFORMATION**: MUTCD – Interim Approval for Optional Use of a Bicycle Signal Face (IA-16)

Date: DEC 24 2013

From: Jeffrey A. Lindley
Associate Administrator for Operations

In Reply Refer To:
HOTO-1

To: Federal Lands Highway Division Engineers
Division Administrators

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of bicycle signal faces. Interim Approval allows interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

All numerical or alpha-numeric references to Figures, Groups, Paragraphs, Parts, or Sections herein refer to the 2009 edition of the MUTCD.

Background: Part 9, Traffic Control for Bicycle Facilities, does not provide for bicycle signal faces. Part 4, Highway Traffic Signals, contains provisions to provide circular signal indications to control bikeways or bicycle movements (see Item F in Paragraph 3 of Section 4D.07). There are no provisions in the 2009 MUTCD that prohibit arrow signal indications from also being used to control bikeways or bicycle movements. However, bicycle signal faces that contain bicycle symbols are not mentioned in the 2009 MUTCD, and Paragraph 1 of Section 4D.06 provides that each signal indication (except for pedestrian signal heads and lane-use control signals) shall be circular or arrow.

The bicycle signal face described in this Interim Approval memorandum is a new traffic control device to the MUTCD and has only been used in the United States on an experimental basis through the MUTCD's experimentation process, which is described in Section 1A.10.

Research on Bicycle Signal Faces: Agencies across the United States are showing an increased interest in bicycle signal faces, and many of them have submitted requests to the Federal Highway Administration (FHWA) to experiment with bicycle signal faces. During the past 5 years, the FHWA has approved experiments with bicycle signal faces for a variety of State, county and local governmental agencies, including the following: the City of Denver, CO; the City of Long Beach, CA; the City of Washington, D.C.; the City of Minneapolis, MN; the City of Alexandria, VA; the County of Arlington, VA; the City of Madison, WI; the Oregon Department of Transportation; the County of Clackamas, OR;

the City of Canton, OH; the City of Sparks, NV; the City of Chicago, IL; the City of Lakeland, FL; and the City of Ithaca, NY.

In these experiments, the bicycle signal face is a traffic control device that is being used to provide for separate control of the bicycle movement and address one or more of the following situations:

1. Bicyclist non-compliance with the previous traffic control;
2. Provide a leading or lagging bicycle interval;
3. Continue the bicycle lane on the right-hand side of an exclusive turn lane that would otherwise be in non-compliance with Paragraph 6 of Section 9C.04;
4. Augment the design of a segregated counter-flow bicycle facility;
5. Provide an increased level of safety by facilitating unusual or unexpected arrangements of the bicycle movement through complex intersections, conflict areas, or signal control.

Research by governmental agencies internationally and also by academic institutions in the United States has also been performed on the operation of bicycle signal faces. These efforts include the Transportation Association of Canada, the Oregon Transportation Research and Education Consortium, and the City of Toronto, Ontario. Results by these organizations have been consistent with the findings of official experiments approved by the FHWA.

FHWA Evaluation of Results: The Office of Transportation Operations has reviewed the available data and considers the experimental bicycle signal face to be satisfactorily successful for the bicycle applications that were tested. Positive operational effects have been documented in the experiments such as a discernible and earlier behavioral adjustment(s) to newly installed bicycle traffic signals and traffic patterns as opposed to other devices, thereby resulting in an increased compliance by bicyclists with the traffic control. Additionally, depending on the specific application of the bicycle signal face, the research and experiments have shown that bicycle signal faces can provide an opportunity to either reduce the overall number of bicycle crashes, or reduce the bicycle crash rate up to 45 percent where bicycle volumes concurrently increase.

The design of the experimental bicycle signal face is not proprietary and can be used by any jurisdiction that requests and obtains approval from the FHWA to use bicycle signal faces in accordance with Paragraphs 14 through 22 of Section 1A.10. The FHWA believes that the experimental bicycle signal face has a low risk of safety or operational concerns.

This Interim Approval does not create a new mandate compelling the use of bicycle signal faces, but will allow agencies to install bicycle signal faces, pending official MUTCD rulemaking, to control bicycle movements at various locations and conditions.

While circular traffic signal indications can be used to control and facilitate bicycle movements as provided in Part 4, consideration should be given to any policy that uses the bicycle signal face to control specific bicycle movements. Agencies should exercise consistency with the decision to introduce bicycle signal faces to a roadway or bikeway network and use caution with any non-systematic policy to use bicycle signal faces because

the intermixing of bicycle traffic signal faces and circular traffic signal indications to control bicycle movements in the same corridor or jurisdiction could create comprehension issues by the roadway user or violate bicyclist expectation.

Conditions of Interim Approval: The FHWA will grant permission for the optional use of bicycle signal faces under this Interim Approval to any jurisdiction that submits a written request to the Office of Transportation Operations. A State may request Interim Approval for all jurisdictions in that State. Jurisdictions seeking permission to use bicycle signal faces under this Interim Approval must agree to:

- Comply with the technical conditions detailed below, and
- Maintain an inventory list of all locations where bicycle signal faces are installed, and
- Comply with Item D in Paragraph 18 of Section 1A.10.

1. General Conditions:

   The use of a bicycle signal face is optional. However, if an agency opts to use bicycle signal faces under this Interim Approval, such use shall be limited to situations where bicycles moving on a green or yellow signal indication in a bicycle signal face are not in conflict with any simultaneous motor vehicle movement at the signalized location, including right (or left) turns on red.

2. Meaning of Bicycle Signal Indications

   Steady and flashing RED BICYCLE, YELLOW BICYCLE, and GREEN BICYCLE signal indications shall have the same meanings as described in Paragraph 3 of Section 4D.04 for steady and flashing CIRCULAR RED, CIRCULAR YELLOW, and CIRCULAR GREEN signal indications for motor vehicles, respectively, except that the bicycle signal indications shall only be applicable to bicyclists.

3. Application of Steady Bicycle Signal Indications

   Steady bicycle signal indications shall be applied as follows:

   a. A steady RED BICYCLE signal indication shall be displayed when it is intended to prohibit bicycle traffic from entering the intersection or other controlled area. Turning after stopping is permitted as stated in Item C.1 in Paragraph 3 of Section 4D.04, except that bicyclists positioned to the left of adjacent motor vehicle traffic on the same approach shall be prohibited from turning right on red, and bicyclists positioned to the right of adjacent motor vehicle traffic on the same approach shall be prohibited from turning left on red.

   b. A steady YELLOW BICYCLE signal indication shall be displayed following a GREEN BICYCLE signal indication or a GREEN ARROW in the same signal face. It shall not be displayed in conjunction with the change from the RED BICYCLE signal indication to a green signal indication. The YELLOW BICYCLE indication shall be followed by a RED BICYCLE signal indication.

   c. A steady GREEN BICYCLE signal indication shall be displayed only when it is intended to permit bicyclists to proceed in any direction that is lawful and

practical, provided that the bicyclists are not in conflict with any simultaneous motor vehicle movements at the signalized location, including right (or left) turns on red, and further provided that the bicycle movement is not modified by lane-use signs, turn prohibition signs, pavement markings, separate turn signal indications, or other traffic control devices.

4. Design of Bicycle Signal Faces:

   a. Layout: The layouts and arrangements of the bicycle signal face (see Attachment IA-16-1) shall be in accordance with the following provisions:

      i. Only the bicycle symbol shown on Page 6-7 in the 2004 Standard Highway Signs book is to be used for bicycle signal indications. The symbol shall only be positioned horizontally and shall face to the left.

      ii. Bicycle signal faces may be oriented vertically or horizontally. The RED BICYCLE, YELLOW BICYCLE, and GREEN BICYCLE signal indications shall be in the same relative position to each other as specified for the CIRCULAR RED, CIRCULAR YELLOW, and CIRCULAR GREEN signal indications for motor vehicles, respectively, in Sections 4D.09 and 4D.10.

      iii. Circular signal indications and bicycle signal indications shall not be used on the same traffic signal face.

      iv. Arrow signal indications and bicycle signal indications may be used on the same traffic signal face.

      v. As a specific exception to Paragraph 5 of Section 4D.09, two YELLOW BICYCLE signal indications or two GREEN BICYCLE signal indications shall not be arranged horizontally adjacent to each other at right angles to the basic vertical arrangement to form a clustered signal face.

      vi. Single sections for continuous movements that would implement the bicycle symbol as illustrated in Group C of Figure 4D-2 shall not be used.

   b. Size: The provisions of Section 4D.07 apply to the sizes of bicycle signal faces except as follows:

      i. There shall be three nominal diameter sizes for bicycle signal indications: 4 inches, 8 inches, and 12 inches. The bicycle symbol used for bicycle signal indications shall be proportioned to fit within the signal lens.

      ii. All signal indications in a bicycle signal face shall be of the same size, including both signal indications that display arrows and signal indications that display bicycle symbols. As a specific exception to Paragraph 2 in Section 4D.07, 4-inch and 8-inch arrow signal indications may be used in bicycle signal faces.

      iii. Four-inch signal indications shall only be used in supplemental, post-mounted, near-side bicycle signal faces. If used, 4-inch signal indications may exclude

the accompanying visor(s) and backplate. Near-side bicycle signal faces may alternatively be either 8-inch or 12-inch.

c. Placement: The provisions of Sections 4D.13 through 4D.16 apply to the placement of the bicycle signal faces except as follows:

i. As a specific exception to Item A in Paragraph 1 of Section 4D.11, a minimum of one primary bicycle signal face shall be provided traffic control for the bicycle movement, even if a bicycle through movement exists.

ii. The primary bicycle signal face shall have either 8-inch or 12-inch signal indications, even if it is located at the near side of the signal-controlled location.

iii. When the primary bicycle signal face is located more than 120 feet from beyond the stop line, a supplemental near-side bicycle signal face shall be provided.

iv. When the primary bicycle signal face is located more than 80 feet from beyond the stop line, a supplemental near-side bicycle signal face should be provided.

v. Bicycle signal faces should be placed such that visibility is maximized for bicyclists and minimized for adjacent or conflicting motor vehicle movements. In cases where motor vehicle drivers might be confused by viewing the bicycle signal indications, such as when the start or end of a green bicycle signal indication occurs at a different time than the start or end of a green signal indication for a concurrent adjacent motor vehicle movement, consideration should be given to using visibility-limited bicycle signal faces. If visibility-limited bicycle signal faces are used, the signal faces shall be adjusted so that bicyclists for whom the indications are intended can see the signal indications.

vi. A bicycle signal face should be separated vertically or horizontally from the nearest motor vehicle traffic signal face for the same approach by at least 3 feet.

d. Mounting Height: The provisions of Section 4D.15 apply to the mounting height of bicycle signal faces except as follows:

i. The bottom of the signal housing (including brackets) of a bicycle signal face that is not located over a roadway shall be a minimum of 7 feet above the sidewalk or ground, except where supplemental signing is installed below the bicycle signal face. If supplemental signing is installed below the bicycle signal face, the minimum mounting height to the bottom of the supplemental sign shall be 6 feet. If the bottom of the supplemental sign is mounted less than 7 feet above a pedestrian sidewalk or pathway, the supplemental sign shall not project more than 4 inches into the pedestrian facility.

ii. If 4-inch signal indications are used in a supplemental, post-mounted, near-side bicycle signal face, the bottom of the signal housing (including brackets) shall be a minimum of 4 feet and a maximum of 8 feet above the sidewalk or ground.

e. Intensity and Light Distribution: Except for the 4-inch nominal size of the lens diameter, the intensity and distribution of light from each illuminated bicycle signal face should be similar to that recommended for vehicular traffic signal faces in accordance with Paragraph 10 of Section 4D.06 to the extent practicable.

f. Backplates: Backplates may be used with bicycle signal faces. If used, ancillary legends of any kind that identify the purpose or operation of the bicycle signal face shall not be placed on the backplate.

5. Operation of Bicycle Signal Faces:

The provisions of Part 4 apply to the operation of bicycle signal faces except as follows:

a. Mode: The mode of operation of the bicycle signal faces shall be the same as the mode for the operation traffic signal faces for motor vehicle traffic. Bicycle signal faces shall operate in the steady (stop-and-go) mode when traffic signal faces for motor vehicle traffic are operating in the steady (stop-and-go) mode. Bicycle signal faces shall operate in the flashing mode when the signal faces for motor vehicles are operating in the flashing mode, whether programmed or due to a malfunction. Bicycle signal faces shall not be placed in a dark mode when the traffic signal faces for motor vehicle traffic are operating in the flashing mode.

b. Timing: The provisions of Section 4D.26 apply to the duration of the yellow change and the red clearance intervals of a bicycle signal phase except as follows:

i. The minimum duration of the yellow change interval shall be 3 seconds.

ii. The maximum duration of the yellow change interval should be 6 seconds. The exclusive function of the yellow change interval shall be to warn bicyclists approaching a signalized location that their permission to proceed is being terminated after which they will be directed to stop. Providing enough clearance time for a bicyclist to travel through the intersection or conflict area is the purpose of the red clearance interval, not of the yellow change interval.

iii. If discernible non-concurrent activations or terminations of phases for motorized vehicular traffic and bicycle signal indications are necessary, visibility-limiting devices should be used on the bicycle signal face.

c. Turning Movements: The following provisions apply to turning movements for bicyclists:

i. In cases where it is necessary to prohibit certain turning movements by bicyclists because of a conflict with motor vehicles moving concurrently from an adjacent lane(s), the bicycle signal face shall use a combination of red and yellow bicycle symbol (or arrow) signal indications and green arrow signal indications. Examples of typical bicycle signal face arrangements for accomplishing turn prohibitions are shown in Attachment IA-16-2.

In the presence of a bicycle signal face, the prohibition of bicycle turning movements shall not solely be through the use of movement prohibition signs (see Section 2B.18), modifications thereof, or through the use of plaques that supplement movement prohibition signs.

ii. As a specific exception to Paragraph 11 of Section 4D.05, the simultaneous display of a straight-through GREEN ARROW signal indication in a bicycle signal face and a CIRCULAR RED signal indication in a motor vehicle signal face for the same approach shall be permitted. If the green arrows in the bicycle signal face can be seen by motor vehicle drivers in the adjacent lane(s), consideration should be given to using visibility-limited bicycle signal faces.

6. Warrants for Bicycle Signal Faces

No new traffic signal warrant(s) specific to bicycle signal faces or in addition to those already provided in Chapter 4C are associated with this Interim Approval. Retrofitting existing traffic signals with bicycle signal faces is analogous to retrofitting existing traffic signals with pedestrian signals where such a determination is not required through an engineering study. Rather, engineering judgment is to be exercised in determining whether or not it would be advantageous or beneficial to have an existing location implement a bicycle signal face(s) or pedestrian signals.

New designs or installations for any traffic signal require an engineering study in accordance with Paragraph 1 of Section 4C.01. The need to incorporate bicycle signal faces into a new location or design would be established through this engineering study. For the purposes of an engineering study the appropriate warrant(s) provided in Chapter 4C shall be followed.

For the purpose of warrant analyses, provisions for classifying bicycles are provided in Paragraph 15 of Section 4C.01 and Paragraph 2 of Section 9D.01.

7. Regulatory Signing:

A Bicycle SIGNAL (R10-10b) sign (see Attachment IA-16-3) shall be installed immediately adjacent to every bicycle signal face that is intended to control only bicyclists, including signal faces that are comprised of all bicycle symbol signal indications, all arrow signal indications, and every combination thereof. The purpose of the sign is to inform any motor vehicle drivers who can also see the signal face that these signal indications are intended only for bicyclists.

Traffic signal designs are to minimize other signing and rely on the fact that bicycles are legally considered vehicles and their responsibility to comply with traffic control devices and yield to other vehicles and pedestrians is part of the bicycling task.

8. Prohibited Uses:

   The design, use, and operation of the bicycle signal face through this Interim Approval shall be in accordance with Items 1 through 7 above. If a specific use, application, or design element for bicycle signal faces has not been described in Items 1 through 7 above, and if the specific use, application, or design element would not otherwise be in compliance with the 2009 MUTCD, then the specific use, application, or design element is not permitted under this Interim Approval.

   The following are among the applications of bicycle signal faces that shall not be permitted under this Interim Approval:

   a. Pedestrian Hybrid Beacons: Bicycle signal faces shall not be used in any manner with respect to the design and operation of a pedestrian hybrid beacon.

   b. Shared Lane Markings Only: Bicycle signal faces shall not be used for controlling any bicycle movement that is sharing a lane with motor vehicle traffic.

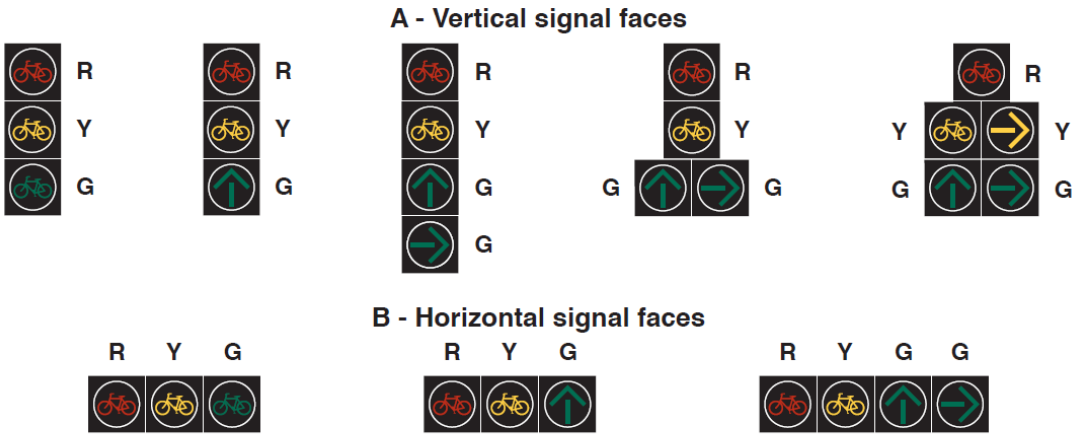
   c. Exclusive Bicycle Phases that permit "Scramble" Phases: Bicycle signal faces shall not be used to provide a bicycle phase that stops all motorized vehicles and pedestrians at the signalized location in order to allow multiple bicycle movements from multiple conflicting directions.

Any questions concerning this Interim Approval should be directed to Mr. Kevin Dunn at kevin.dunn@dot.gov.

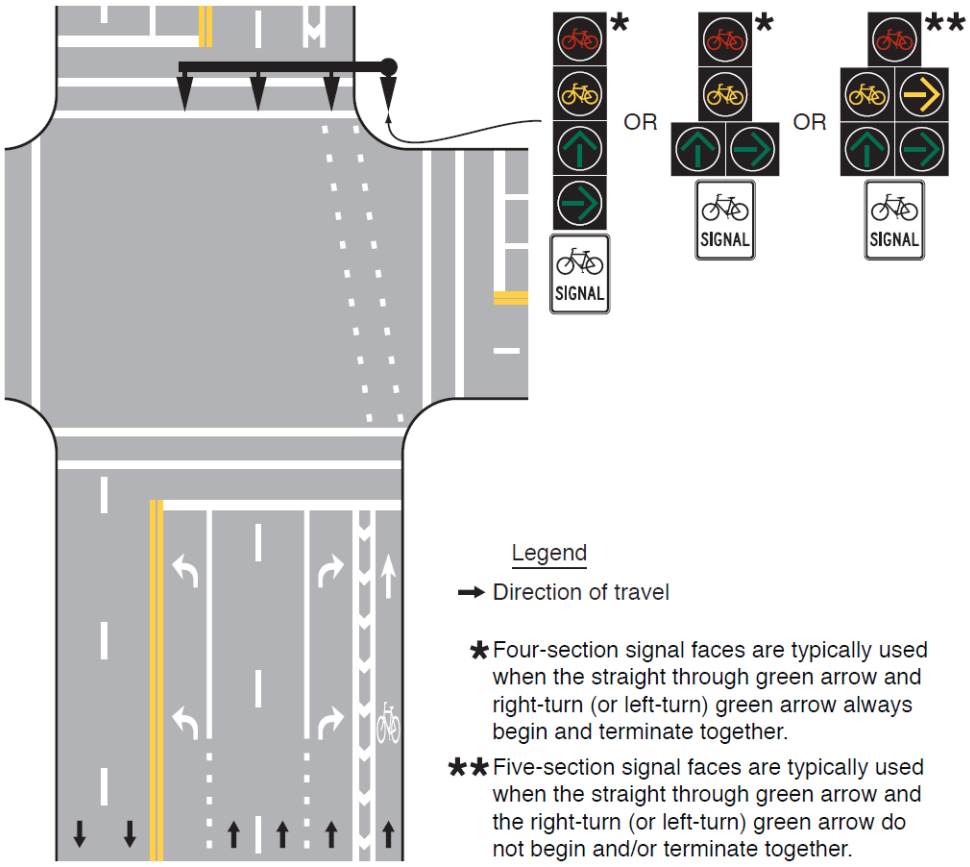
Attachment(s)

cc:
Associate Administrators
Chief Counsel
Chief Financial Officer
Directors of Field Services
Director of Technical Services

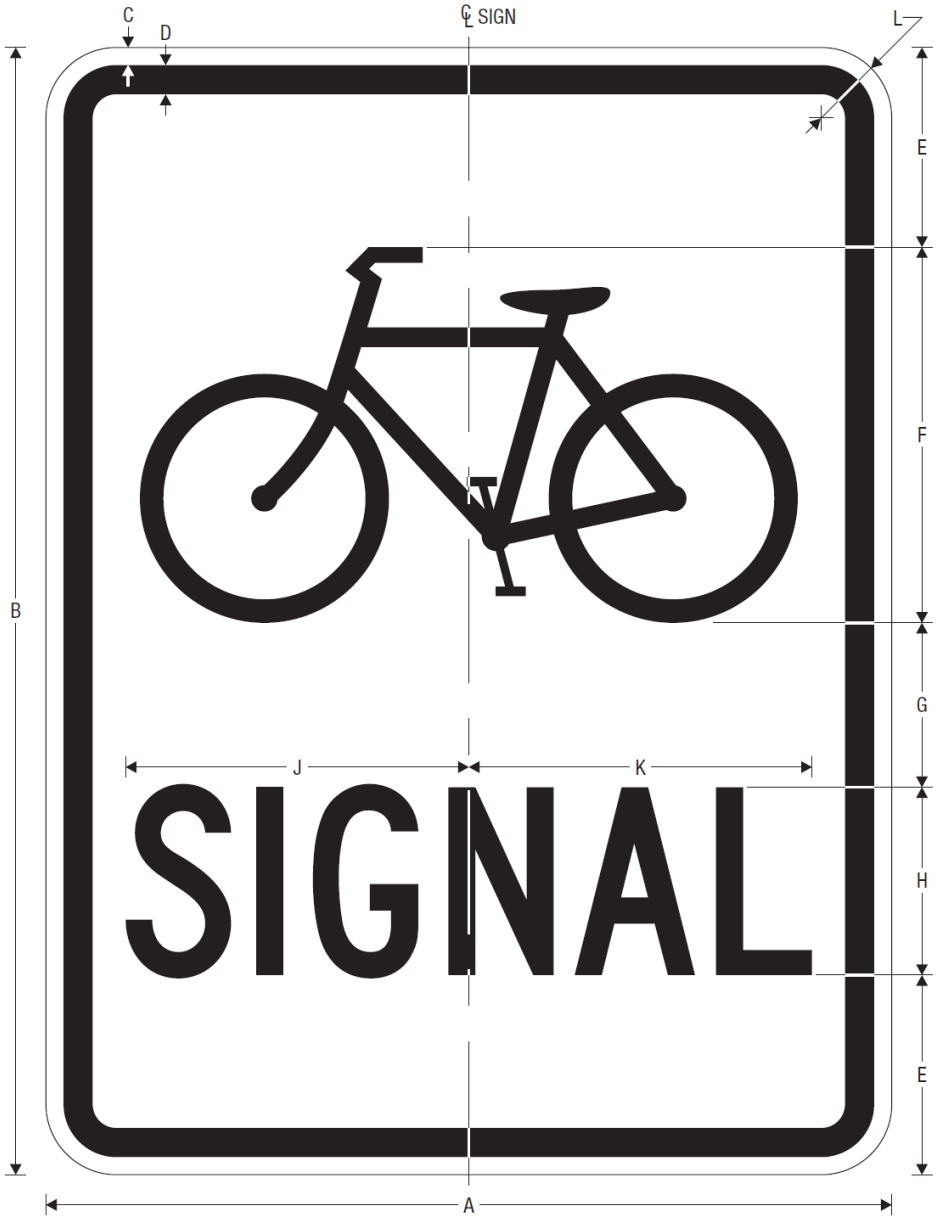
Attachment IA-16-1
Typical Arrangements of Signal Sections in Bicycle Signal Faces



Attachment IA-16-2
Example of How to Prohibit a Left-Turning Bike Movement



ATTACHMENT IA-16-3
Issued 12/23/2013



R10-10b
Bicycle SIGNAL

* Reduce character spacing 20%.

A	B	C	D	E	F	G	H	J	K	L
12	18	0.375	0.375	4	5	2.5	2.5 C*	4.564	4.564	1.5
18	24	0.375	0.625	4.25	8	3.5	4 C*	7.303	7.302	1.5

COLORS: LEGEND, BORDER – BLACK
BACKGROUND – WHITE (RETROREFLECTIVE)

14-11 Amendments to various Sections/Figures of Part 9 Bicycle Facilities of the CA MUTCD 2012 Based on Public Comments

Recommendation: Caltrans requests that the CTCDC make recommendations for the adoption of the Part 9 Sections/Figures as amended under the proposal.

Requesting: Public Comments

Sponsoring Agency: Caltrans

Background: Proposed amendments are based on the comments made by individuals during the CA MUCTD 2012 adoption process. These comments were reviewed and discussed in the CTCDC Workshops. Only those Sections have amended which were agreed by the Workshop technical committee**.**

Proposal:

CA MUTCD - Part 9 Proposed Amendments from October 2011 CTCDC Meeting

	CA MUTCD							
No.	Part-Section	CA MUTCD ; Agenda Page	Table	Figure	Commenter	Description of Comment	Workshop Resolution	Change Reflected As of 3/2014
1	9B.19	1357; 34			Caltrans District 4	Bikes on Freeway Next ___ Mile	Agree. Need is there, the sign needs to be brought back. Bikes on Freeway Next X Miles. Sections 2C.49 & 2C.55 cover the Next X Miles Plaque. Need to add reference to Section 9B.101(CA). Future CTCDC agenda item.	Add: #2a to 9C-19 option
2	9B.19	1373; 35	9B-1		Suzanne Theiss, Local Assistance, Caltrans, District 1	How is it communicated to motorists and law enforcement on the mainline where bicycles/motor-driven cycles are allowed back on the freeway (Class III bike route) after passing through an area where they are prohibited? Suggest using either W11-1 & W16-1P or D11-1a , or?	Agree. See above	Revise: table
3	9B.23	1360; 36			John Ciccarelli	These are two edit suggestions. First, change the section title to "... Signs (D4-3 and G93C(CA)". Second, the D4-3 sign has an arrow but the G93 (CA) does not. The first sentence of the Option statement says, "where it is desirable to show the direction to a designated bicycle parking area", but "direction" does not apply to the G93(CA) unless an arrow plaque is added. Consider rewording accordingly.	Agree, this issue is now addressed in current CA MUTCD 2012.	Revised: Section 9B.23
4	9C.04	1379; 37			Jim Brake, Caltrans D03	In the first Guidance, eliminate "(11 ft to 13 ft between the bike lane line and the curb)". This implies that the maximum width with parking is 13 feet, but widths up to 16 feet are preferable to 13 feet, due to door opening conflicts.	Agree to eliminate phrase "(11 ft to 13 ft between the bike lane line and the curb)" as it is not needed for the gist of this sentence. Fig. 9C-102(CA) shows the dimensions.	Revised: Section 9C.04 and #17
5	9C.04	1380; 38			Jim Brake, Caltrans D03	Standard: Change ", or 5 ft if a gutter exists" to "or 3 ft of pavement if a gutter exists". Although 2 ft wide gutters are standard, 1 ft widths are allowed, and this provides more paved width for bicyclists, especially in retrofit situations.	Agree. Needs to be a future CTCDC agenda item. See edited Fig. during the workshop. Section 9C.04, page 1380, paragraph #35 text needs to be edited per HDM.	Revised: Section 9C.04 and #35
6	9C.04	1384; 39		9C-3	Jim Brake, Caltrans D03	This figure should include a note that states that all pavement markings are optional , except Detail 39, to be consistent with Section 9C.04.	Agree. Needs to be a future CTCDC agenda item. Agree for bike symbols in A & B per page 1380, paragraph #42. Add ** for bike symbol, helmeted symbol, word legend to say required at far side of intersection, other use is optional elsewhere. No change to other notes. "BIKE LANE" marking retained as it is a "shall" on far side of each intersection per page 1380, paragraph #39.	Revised: Fig *option
7	9C.04	1388; 40		9C-6	Jim Brake, Caltrans D03	There is a dimension note on the lower right for the dashed line that is not consistent with standard dimensions. Detail 39A is dashed at 4 ft long with 8 ft gaps, not 2 ft with 6 ft gaps.	Agree. Call out the detail #. Needs to be a future CTCDC agenda item.	Revised: Fig

Background

Caltrans has signs that tell bicycles (and motor driven cycles) to get off of the highway/freeway (R44B (CA) and R44C (CA)), but there are no signs to show where it is permissible to get back on or to inform motorists that bicyclists are permitted to use the freeway. Unless otherwise prohibited, bicyclists are permitted to use all California roadways; therefore, there is no need to specifically inform motorists or bicyclists when bicycles are permissible on a freeway. There is sometimes a need, however, to remind motorists to be aware of bicycle traffic after a section where bicycles are prohibited, and currently the CAMUTCD does not address this issue.

R44B (CA)

R44C (CA)

The 1996 Traffic Manual states the Bicycle Symbol Sign (W79, now W11-1) can be used with the Next __ Miles plate (W71, now W7-3aP): "The Next __ Miles plate (W71) … should be used below the W79 sign" (4-37), and that the combination may "be used to warn of unexpected bicycle traffic on the traveled way as determined by an engineering study" (4-37). This direction was not carried into any version of the CAMUTCD.

W11-1

In the CAMUTCD, the Bicycl W11-1) is y in use with bicycle crossing and the Next XX Miles Plaque (W7-3aP) is warning sign "to inform road users of the length of roadway over which the condition indicated ign exists" (2C-20), but does not specifically mention combination with W11-1. Section 5C.09 states "Vehicular traffic signs [W11 Series] (see Figure 5C-2) should be used to alert road users to frequent unexpected entries into the roadway by… bicyclists. Such signs should be used only at locations where … the activity would be unexpected" (2C-20) in Part 5: Traffic Control Devices for Low-Volume Roads and is therefore not applicable to general use on freeways.

Proposals

It is proposed that verbiage be added in section 9B.19 to include the use of the "NEXT XX MILES" (W7-3a) sign in combination with and below the Bicycle Warning (W11-1), as an option, to warn of unexpected bicycle traffic on the traveled way under any circumstances, not only for low-volume roads (see Recommended update section below).

Section 9B.17 Bicycle Surface Condition Warning Sign (W8-10)

Option:

01 The Bicycle Surface Condition Warning (W8-10) sign (see Figure 9B-3) may be installed where roadway or shared-use path conditions could cause a bicyclist to lose control of the bicycle.

02 Signs warning of other conditions that might be of concern to bicyclists, including BUMP (W8-1), DIP (W8-2), PAVEMENT ENDS (W8-3), and any other word message that describes conditions that are of concern to bicyclists, may also be used.

03 A supplemental plaque may be used to clarify the specific type of surface condition.

Section 9B.18 Bicycle Warning and Combined Bicycle/Pedestrian Signs (W11-1 and W11-15)

Support:

01 The Bicycle Warning (W11-1) sign (see Figure 9B-3) alerts the road user to unexpected entries into the roadway by bicyclists, and other crossing activities that might cause conflicts. These conflicts might be relatively confined, or might occur randomly over a segment of roadway.

Option:

02 The combined Bicycle/Pedestrian (W11-15) sign (see Figure 9B-3) may be used where both bicyclists and pedestrians might be crossing the roadway, such as at an intersection with a shared-use path. A TRAIL X-ING (W11-15P) supplemental plaque (see Figure 9B-3) may be mounted below the W11-15 sign.

03 A supplemental plaque with the legend AHEAD or XX FEET may be used with the Bicycle Warning or combined Bicycle/Pedestrian sign.

Guidance:

04 *If used in advance of a specific crossing point, the Bicycle Warning or combined Bicycle/Pedestrian sign should be placed at a distance in advance of the crossing location that conforms with the guidance given in Table 2C-4.*

Standard:

05 **Bicycle Warning and combined Bicycle/Pedestrian signs, when used at the location of the crossing, shall be supplemented with a diagonal downward pointing arrow (W16-7P) plaque (see Figure 9B-3) to show the location of the crossing.**

Option:

06 A fluorescent yellow-green background color with a black legend and border may be used for Bicycle Warning and combined Bicycle/Pedestrian signs and supplemental plaques.

Guidance:

07 *When the fluorescent yellow-green background color is used, a systematic approach featuring one background color within a zone or area should be used. The mixing of standard yellow and fluorescent yellow-green backgrounds within a zone or area should be avoided.*

Section 9B.19 Other Bicycle Warning Signs

Option:

01 Other bicycle warning signs (see Figure 9B-3) such as PATH NARROWS (W5-4a) and Hill (W7-5) may be installed on shared-use paths to warn bicyclists of conditions not readily apparent.

02 In situations where there is a need to warn motorists to watch for bicyclists traveling along the highway, the SHARE THE ROAD (W16-1P) plaque (see Figure 9B-3) may be used in conjunction with the W11-1 sign.

02a In situations where there is a need to warn motorists to watch for bicyclists traveling along the freeway, the NEXT XX MILES (W7-3aP) plaque (see Figures 2C-4 and 2C-12) may be used in conjunction with the W11-1 sign.

Guidance:

03 *If used, other advance bicycle warning signs should be installed at least 50 feet in advance of the beginning of the condition.*

04 *Where temporary traffic control zones are present on bikeways, appropriate signs from Part 6 should be used*

Table 9B-1. Bicycle Facility Sign and Plaque Minimum Sizes (Sheet 1 of 2)

Sign or Plaque	Sign Designation	Section	Shared-Use Path	Roadway
Stop	R1-1	2B.05, 9B.03	18 x 18	30 x 30
Yield	R1-2	2B.08, 9B.03	18 x 18 x 18	30 x 30 x 30
~~Bike Lane~~	~~R3-17~~	~~9B.04~~	~~—~~	~~24 x 18~~
~~Bike Lane (plaques)~~	~~R3-17aP, R3-17bP~~	~~9B.04~~	~~—~~	~~24 x 8~~
Movement Restriction	R4-1,2,3,7,16	2B.28,29,30,32; 9B.14	12 x 18	18 x 24
Begin Right Turn Lane Yield to Bikes	R4-4	9B.05	--	36 x 30
Bicycles May Use Full Lane	R4-11	9B.06	--	30 x 30
Bicycle Wrong Way	R5-1b	9B.07	12 x 18	12 x 18
No Motor Vehicles	R5-3	9B.08	24 x 24	24 x 24
No Bicycles	R5-6	9B.09	18 x 18	24 x 24
No Parking Bike Lane	R7-9,9a	9B.10	--	12 x 18
No Pedestrians	R9-3	9B.09	18 x 18	18 x 18
Ride With Traffic (plaque)	R9-3cP	9B.07	12 x 12	12 x 12
Bicycle Regulatory	R9-5,6	9B.11	12 x 18	12 x 18
Shared-Use Path Restriction	R9-7	9B.12	12 x 18	--
No Skaters	R9-13	9B.09	18 x 18	18 x 18
No Equestrians	R9-14	9B.09	18 x 18	18 x 18
Push Button for Green Light	R10-4	9B.11	9 x 12	9 x 12
To Request Green Wait on Symbol	R10-22	9B.13	12 x 18	12 x 18
Bike Push Button for Green Light	R10-24	9B.11	9 x 15	9 x 15
Push Button to Turn On Warning Lights	R10-25	9B.11	9 x 12	9 x 12
Bike Push Button for Green Light (arrow)	R10-26	9B.11	9 x 15	9 x 15
Grade Crossing (Crossbuck)	R15-1	8B.03, 9B.14	24 x 4.5	48 x 9
Number of Tracks (plaque)	R15-2P	8B.03, 9B.14	13.5 x 9	27 x 18
Look	R15-8	8B.17, 9B.14	18 x 9	36 x 18
Turn and Curve Warning	W1-1,2,3,4,5	2C.04, 9B.15	18 x 18	24 x 24
Arrow Warning	W1-6,7	2C.12, 2C47, 9B.15	24 x 12	36 x 18
Intersection Warning	W2-1,2,3,4,5	2C.46, 9B.16	18 x 18	24 x 24
Stop, Yield, Signal Ahead	W3-1,2,3	2C.36, 9B.19	18 x 18	30 x 30
Narrow Bridge	W5-2	2C.20, 9B.19	18 x 18	30 x 30
Path Narrows	W5-4a	9B.19	18 x 18	--
Next XX Miles (plaque)	W7-3aP	2C.55, 9B.19	18 x 12	24 x 18
Hill	W7-5	9B.19	18 x 18	30 x 30
Bump or Dip	W8-4,2	2C.28, 9B.17	18 x 18	24 x 24
Pavement Ends	W8-3	2C.30, 9B.17	18 x 18	30 x 30
Bicycle Surface Condition	W8-10	9B.17	18 x 18	30 x 30
Slippery When Wet (plaque)	W8-10P	9B.17	12 x 9	12 x 9
Grade Crossing Advance Warning	W10-1	8B.06, 9B.19	24 Dia.	36 Dia.
No Train Horn (plaque)	W10-9P	8B.21, 9B.19	18 x 12	30 x 24
Skewed Crossing	W10-12	8B.25, 9B.19	18 x 18	36 x 36
Bicycle Warning	W11-1	9B.18	18 x 18	24 x 24
Pedestrian Crossing	W11-2	2C.50, 9B.19	18 x 18	24 x 24
Combination Bike and Ped Crossing	W11-15	9B.18	18 x 18	30 x 30
Trail Crossing (plaque)	W11-15P	9B.18	18 x 12	24 x 18
Low Clearance	W12-2	2C.27, 9B.19	18 x 18	30 x 30
Playground	W15-1	2C.51, 9B.19	18 x 18	24 x 24

Background: The Bicycle Parking (G93C(CA)) sign was included in this section in the CAMUTCD 2012 Edition; however, the Bicycle Parking Area (D4-3) sign has a directional arrow where the G93(CA) does not. Only when combined with an Arrow auxiliary sign does the G93C(CA) become directional. Therefore, the phrase "in combination with an Arrow auxiliary sign" should be included after "Bicycle Parking (G93C(CA)) sign" so the sentence is clear and correct.
The Section title should also include the G93C(CA) sign, since it is described in this section.

Section 9B.23 Bicycle Parking ~~Area~~ Signs (D4-3 and G93C(CA))

Option:

01 The Bicycle Parking Area (D4-3) sign (see Figure 9B-4) or Bicycle Parking (G93C(CA)) sign (see Figure 9B-4(CA)) may be installed where it is desirable to show the direction to a designated bicycle parking area. The arrow may be reversed as appropriate.

01a The Advance Turn Arrow or Directional Arrow auxiliary signs (see Section 2D.26 and 2D.28) may be used in combination with and below the G93C(CA) sign to show direction to a designated bicycle parking area.

Standard:

02 **The legend and border of the Bicycle Parking Area sign shall be green on a retroreflectorized white background.**

Section 9B.24 Reference Location Signs (D10-1 through D10-3) and Intermediate Reference Location Signs (D10-1a through D10-3a)

Support:

01 There are two types of reference location signs:

A. Reference Location (D10-1, 2, and 3) signs show an integer distance point along a shared-use path; and
B. Intermediate Reference Location (D10-1a, 2a, and 3a) signs also show a decimal between integer distance points along a shared-use path.

Option:

02 Reference Location (D10-1 to D10-3) signs (see Figure 9B-4) may be installed along any section of a shared-use path to assist users in estimating their progress, to provide a means for identifying the location of emergency incidents and crashes, and to aid in maintenance and servicing.

03 To augment the reference location sign system, Intermediate Reference Location (D10-1a to D10-3a) signs (see Figure 9B-4), which show the tenth of a mile with a decimal point, may be installed at one tenth of a mile intervals, or at some other regular spacing.

Standard:

04 **If Intermediate Reference Location (D10-1a to D10-3a) signs are used to augment the reference location sign system, the reference location sign at the integer mile point shall display a decimal point and a zero numeral.**

05 **If placed on shared-use paths, reference location signs shall contain 4.5-inch white numerals on a green background that is at least 6 inches wide with a white border. The signs shall contain the word MILE in 2.25-inch white letters.**

06 **Reference location signs shall have a minimum mounting height of 2 feet, measured vertically from the bottom of the sign to the elevation of the near edge of the shared-use path, and shall not be governed by the mounting height requirements prescribed in Section 9B.01.**

Option:

07 Reference location signs may be installed on one side of the shared-use path only and may be installed back-to-back.

08 If a reference location sign cannot be installed in the correct location, it may be moved in either direction as much as 50 feet.

Guidance:

09 *If a reference location sign cannot be placed within 50 feet of the correct location, it should be omitted.*

10 *Zero distance should begin at the south and west terminus points of shared-use paths.*

Support:

11 Section 2H.05 contains additional information regarding reference location signs.

Section 9B.25 Mode-Specific Guide Signs for Shared-Use Paths (D11-1a, D11-2, D11-3, D11-4)

Option:

01 Where separate pathways are provided for different types of users, Mode-Specific Guide (D11-1a, D11-2, D11-3, D11-4) signs (see Figure 9B-4) may be used to guide different types of users to the traveled way that is intended for their respective modes.

Option:

16 The Bike Lane Intersection (Detail 39A) line as shown in Figure 9C-101(CA) may be used to extend the bike lane to or through an intersection.

Bicycle Lane Markings on Class II Bikeways (Bike Lane)

Guidance:

17 *Bicycle lane markings on Class II Bikeways (Bike Lane) should be placed a constant distance from the marked lane line or centerline, as appropriate. Bike lanes with parking permitted ~~(11 to 13 feet between the bike lane line and the curb)~~ should not be directed toward the curb at intersections or localized areas where parking is prohibited. Such a practice prevents bicyclists from following a straight course. Where transitions from one type of bike lane to another are necessary, smooth tapers should be provided.*

Support:

18 Class II Bikeways (Bike Lane) require standard signing and pavement markings as shown in Figure 9C-102(CA). This figure also depicts the proper method of striping bike lanes through intersections. Bike lane lines are not typically extended through intersections.

Guidance:

19 *Where right turns are not permitted, the solid bike lane stripe should extend to the edge of the intersection, and begin again on the far side. Where there is no right turn only lane and right turns are permitted, the solid stripe should terminate 100 feet to 200 feet prior to the intersection.*

Option:

20 A dashed line, as shown in Figure 9C-102(CA), may be carried to, or near, the intersection. Where city blocks are short (less than 400 feet), the length of dashed stripe may be 100 feet.

Guidance:

21 *Where blocks are longer or vehicle speeds are high (greater than 35 mph), the length of dashed stripe should be increased to 200 feet.*

Standard:

22 **Raised barriers (e.g., raised traffic bars and asphalt concrete dikes) or raised pavement markers shall not be used to delineate bike lanes on Class II Bikeways (Bike Lane).**

Support:

23 Raised barriers prevent motorists from merging into bike lanes before making right turns, as required by the CVC, and restrict the movement of bicyclists desiring to enter or exit bike lanes.

24 They also impede routine maintenance. Raised pavement markers increase the difficulty for bicyclists when entering or exiting bike lanes, and discourage motorists from merging into bike lanes before making right turns.

Option:

25 Physical barriers may be used to convert a Class II Bikeway (Bike Lane) to Class I Bikeway (Bike Path).

Bicycle Lane Treatment at Right Turn Only Lanes

Guidance:

26 *A dashed line across the right-turn-only lane should not be used on extremely long lanes, or where there are double right-turn-only lanes. For these types of intersections, all striping should be dropped to permit judgment by the bicyclists to prevail.*

Option:

27 A Bicycle Crossing (W11-1) sign may be used to warn motorists of the potential for bicyclists crossing their path. See Section 9B.17.

28 When a bike lane approaches a ramp intersection that intersects the local facility at or close to 90° (typical of a compact or spread diamond configuration), then Figures 9C-4, 9C-4(CA) and 9C-5 may be the appropriate method of getting bike lanes through the interchange.

Guidance:

29 *However, when a bike lane approaches one or more ramp intersections that intersect the local facility at various angles other than 90° (typically high-speed, skewed ramps), Figure 9C-103(CA) should be used.*

Bicycle Lane Treatment through Interchanges

Support:

30 Markings for a bike lane through a typical interchange are shown in Figure 9C-103(CA).

Guidance:

31 *The 6 inch bike lane stripe should be dropped 100 feet prior to the ramp intersection as shown in Figure 9C-103(CA) to allow for adequate weaving distance.*

Option:

32 Figure 9C-103(CA) may also be used where the preferred designation is a Class III Bikeway (Bike Route), with the Bike Lane (R81(CA)) signs being replaced with Bike Route (D11-1) signs and the bike lane delineation eliminated. A 4 inch stripe may be used to delineate the shoulder through out the bike route designation.

Standard:

33 **Signing and striping as shown in Figure 9C-103(CA) shall be repeated at additional onramps within the interchange.**

Guidance:

34 *Where the onramps intersect at the local road at or near 90º, the striping should be per Figure 9C-4(CA).*

Standard:

35 **The shoulder width shall not be reduced through the interchange area. The minimum shoulder width shall match the approach roadway shoulder width, but not less than 4 feet, or ~~5~~ 3 feet ~~if a~~of pavement if a gutter exists. If the shoulder width is not available, the designated bike lane shall end at the previous local road intersection.**

Bicycle Lane Treatment Where Vehicle Parking is Prohibited/Permitted

Support:

36 Markings for a bike lane where vehicle parking is prohibited or permitted are shown in Figure 9C-102(CA).

Standard:

37 **Where motorist right turns are permitted, the solid bike lane shall either be dropped entirely, or dashed (Refer Bike Intersection lane, Detail 39A, shown in Figure 9C-101(CA)) beginning at a point between 100 feet and 200 feet in advance of the intersection.**

Option:

38 In areas where parking stalls are not necessary (because parking is light), a 4 inch solid white stripe may be painted to fully delineate the bike lane. This may be advisable where there is concern that motorists may misconstrue the bike lane to be a traffic lane.

BIKE LANE Pavement Markings

Standard:

39 **The BIKE LANE pavement markings shall be placed on the far side of each intersection.**

Option:

40 The BIKE LANE pavement markings may also be placed at other locations as desired.

Support:

41 Examples of BIKE LANE pavement markings are shown in various figures in this chapter.

Option:

42 Optional word, arrow and symbol markings with details as shown in Figure 9C-3 may be used.

Section 9C.05 Bicycle Detector Symbol

Option:

01 A symbol (see Figure 9C-7) may be placed on the pavement indicating the optimum position for a bicyclist to actuate the signal.

02 An R10-22 sign (see Section 9B.13 and Figure 9B-2) may be installed to supplement the pavement marking.

Support:

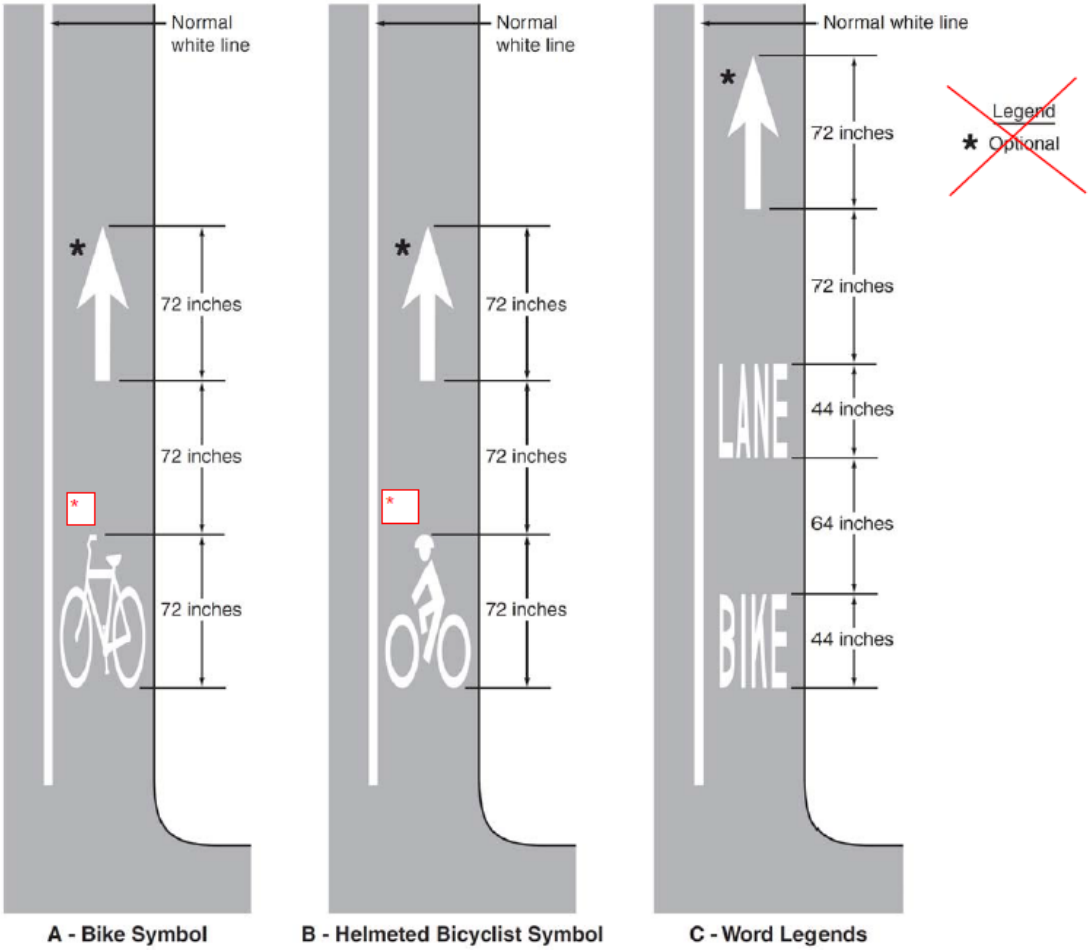
03 Section 4D.105(CA) and Figure 4D-111(CA) contain information on bicycle detectors and their locations.

Section 9C.06 Pavement Markings for Obstructions

Guidance:

01 *In roadway situations where it is not practical to eliminate a drain grate or other roadway obstruction that is inappropriate for bicycle travel, white markings applied as shown in Figure 9C-8 should be used to guide bicyclists around the condition.*

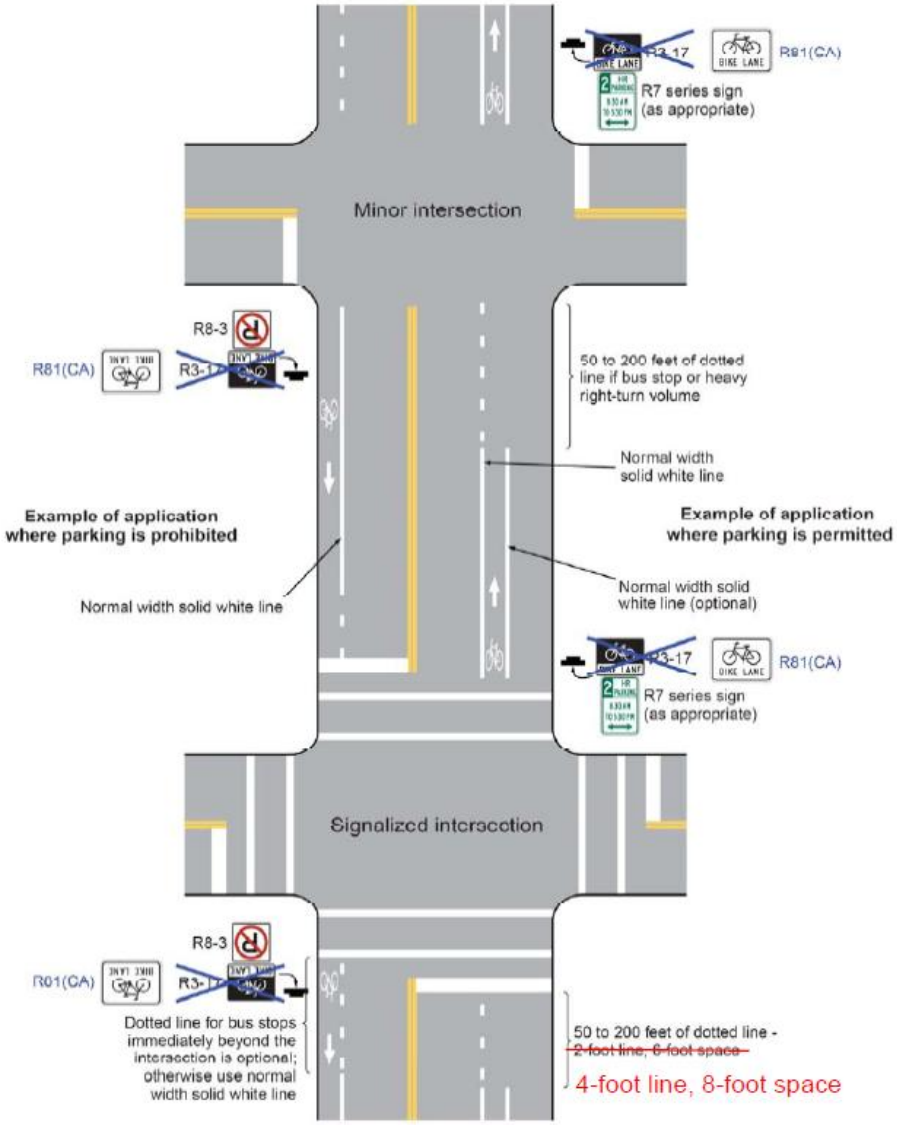
Figure 9C-3. Word, Symbol, and Arrow Pavement Markings for Bicycle Lanes



A - Bike Symbol B - Helmeted Bicyclist Symbol C - Word Legends

* Required at far side of intersection, other use is optional elsewhere.

Figure 9C-6. Example of Pavement Markings for Bicycle Lanes on a Two-Way Street



14-12 Proposal to amend Section 9C.07 of the CA MUTCD 2012, Shared Lane Marking

Recommendation: Caltrans requests that the CTCDC make recommendations for the amendment of Section 9C.07 Shared Lane Marking as shown under the proposal.

Requesting Agency: California Bicycle Advisory Committee (CBAC) to Caltrans

Sponsoring Agency: Caltrans

Background: California Bicycle Advisory Committee (CBAC) mentioned an unresolved issue with CA MUTCD Guidance on "shaarrows". When the CA MUTCD was updated to allow sharrows when speeds are above 35 mph, Traffic Ops mistakenly incorporated language "or shared use path" that was suggested by someone external without adequate vetting. The language about adjacent bike path is not appropriate because bicyclists are not required to use side paths in lieu of using a traffic lane. CBAC suggest to delete "or shared use path" language from Section 9C.07.

Proposal:

California MUTCD 2012 Edition Page 1381
(FHWA's MUTCD 2009 Edition, as amended for use in California)

Section 9C.07 Shared Lane Marking

Option:

01 The Shared Lane Marking shown in Figure 9C-9 may be used to:

A. Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle,
B. Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,
C. Alert road users of the lateral location bicyclists are likely to occupy within the traveled way,
D. Encourage safe passing of bicyclists by motorists, and
E. Reduce the incidence of wrong-way bicycling.

Guidance:

02 *Except as provided in Paragraph 02a, The Shared Lane Marking should not be placed on roadways that have a speed limit above 35 mph.*

Option:

02a The Shared Lane Marking may be placed on roadways that have a speed limit above 35 mph, where there is bicycle travel and there is no marked bicycle lane ~~or shared-use path~~ and the right-hand traffic lane is too narrow to allow ~~automobiles~~ motor vehicles to safely pass bicyclists.

Standard:

03 **Shared Lane Markings shall not be used on shoulders or in designated bicycle lanes.**

Guidance:

04 *If used in a shared lane with on-street parallel parking, Shared Lane Markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.*

05 *If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the Shared Lane Markings should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.*

06 *If used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.*

Option:

07 Section 9B.06 describes a Bicycles May Use Full Lane sign that may be used in addition to or instead of the Shared Lane Marking to inform road users that bicyclists might occupy the travel lane.

7 Discussion Items

14-13 Proposal to amend Section 2B.54 of the CA MUTCD to require the use of blank out No Turn on Red signs at certain intersections where automated photo enforcement is in use

Requested by: James Lissner, 2715 El Oeste Drive, Hermosa Beach, CA 90254

Sponsored by: Hamid Bahadori, Chairman, Representing Auto Club

Background: Please see agenda item 14-07 of February 20, 2014 meeting, and the minutes of that meeting at the following web link:

http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/agenda/agenda-02-19&20-2014.pdf
http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/minutes/2014-02-20-minutes.pdf

Proposal:

Section 2B.54 No Turn on Red Signs (R10-11 Series, R10-17a, and R10-30)

Standard:

01 Where a right turn on red (or a left turn on red from a one-way street to a one-way street) is to be prohibited, a symbolic NO TURN ON RED (symbolic circular red) (R10-11) sign (see Figure 2B-27) or No Right Turn on Red (R13A(CA)) or No Left Turn on Red (R13B(CA)) signs (see Figure 2B-27(CA)) ~~a NO TURN ON RED (R10-11a, R10-11b) word message sign (see Figure 2B-27)~~ shall be used.

Where a right turn on red (or a left turn on red from a one-way street to a one-way street) is to be prohibited at an intersection approach where automated photo enforcement is in use, two or more blank out signs shall be used to display the no right turn symbol (or the no left turn symbol) during those times of day or during those portions of a particular cycle of the traffic signal when the turn on red is prohibited.

Support:

01a Refer to CVC 22101 for the No Turn on Red (R10-11 Series and R13A(CA) and R13B(CA)) signs.

Guidance:

02 If used, the No Turn on Red (R10-11, R13A(CA) or R13B(CA)) sign should be installed near the appropriate signal head.

03 A No Turn on Red (R10-11, R13A(CA) or R13B(CA)) sign should be considered when an engineering study finds that one or more of the following conditions exists:

A. Inadequate sight distance to vehicles approaching from the left (or right, if applicable);

B. Geometrics or operational characteristics of the intersection that might result in unexpected conflicts;

C. An exclusive pedestrian phase;

D. An unacceptable number of pedestrian conflicts with right-turn-on-red maneuvers, especially involving children, older pedestrians, or persons with disabilities;

~~E. More than three right-turn-on-red accidents reported in a 12-month period for the particular approach; or~~

F. The skew angle of the intersecting roadways creates difficulty for drivers to see traffic approaching from their left.

03a No Right Turn on Red (R13A(CA)) sign or No Left Turn on Red (R13B(CA)) sign (see Figure 2B-27(CA)) should be used on the near right of skewed intersections where the adjacent approach leg to the left intersects the driver's approach leg at an angle of less than 75 degrees.

Option:

03b No Right Turn on Red (R13A(CA)) sign or No Left Turn on Red (R13B(CA)) sign (see Figure 2B-27(CA)) may be used on the near right of extremely wide intersections.

Guidance:

03c When used, the No Right Turn on Red (R13A(CA)) sign should be placed where it will most easily be seen by the driver intending to turn. At least one should be placed overhead, or at a right-hand corner facing approaching traffic.

03d When used, the No Left Turn on Red (R13B(CA)) sign should be placed where it will most easily be seen by the driver intending to turn. At least one should be placed overhead, or at a left-hand corner facing approaching traffic.

Option:

04 A supplemental R10-20aP plaque (see Figure 2B-27) showing times of day ~~(similar to the S4-1P plaque shown in Figure 7B-1)~~ with a black legend and border on a white background may be mounted below a No Turn on Red (R10-11, R13A(CA) or R13B(CA)) sign to indicate that the restriction is in place only during certain times.

05 Alternatively, a blank-out sign may be used instead of a static NO TURN ON RED (symbolic circular red) (R1011) sign, to display either the NO TURN ON RED legend or the No Right Turn symbol or word message, as appropriate, only at certain times during the day or during one or more portion(s) of a particular cycle of the traffic signal.

06 On signalized approaches with more than one right-turn lane, a NO TURN ON RED EXCEPT FROM RIGHT LANE (R10-11c) sign (see Figure 2B-27) may be post-mounted at the intersection or a NO TURN ON RED FROM THIS LANE (with down arrow) (R10-11d) sign (see Figure 2B-27) may be mounted directly over the center of the lane from which turns on red are prohibited.

Guidance:

~~07 Where turns on red are permitted and the signal indication is a steady RED ARROW, the RIGHT (LEFT) ON RED ARROW AFTER STOP (R10-17a) sign (see Figure 2B-27) should be installed adjacent to the RED ARROW signal indication.~~

07a The RIGHT (LEFT) ON RED ARROW AFTER STOP (R10-17a) sign is deleted as it compromises the meaning of the right red arrow. A circular red signal face should be used, instead of correcting the condition with this sign.

Option:

08 A RIGHT TURN ON RED MUST YIELD TO U-TURN (R10-30) sign (see Figure 2B-27) may be installed to remind road users that they must yield to conflicting u-turn traffic on the street or highway onto which they are turning right on a red signal after stopping.

8 Information items:

14-14 Proposal to amend Section 2H.02 of the CA MUTCD 2012, General Information Signs

Background:

In response to California State Governor Edmund G. Brown's emergency drought declaration (http://gov.ca.gov/news.php?id=18368) and 20 percent water use reduction mandate (www.saveourh20.org), Caltrans has developed a Water Conservation and Drought Action Plan[1], dated February 6, 2014. As a part of this plan, Caltrans Director Malcolm Dougherty has included that "existing maintenance and construction practices shall utilize recycled water wherever feasible." Also, the Governor's Office Drought Response Team has requested each Department make an effort at public outreach to lead by example. To comply, Caltrans' Division of Maintenance will install S28(CA) signs wherever appropriate to inform the public of Caltrans' drought response and water conservation measures.

In the existing CA MUTCD 2012 Edition, S28(CA) signs read "USING RECLAIMED WATER"; however, the word RECLAIMED is outdated and has been replaced by Caltrans with RECYCLED. To coordinate this change, the S28(CA) sign specification has been updated to read "USING RECYCLED WATER." Caltrans Landscape Maintenance will now use this updated sign specification, replacing signs, as needed, with the updated version of the S28(CA) sign. Terminology for this update was codified in statute in six California codes, including the California Streets and Highways Code by the passage of AB 1247- Setencich, 1995, see:

http://www.leginfo.ca.gov/pub/95-96/bill/asm/ab_1201-1250/ab_1247_bill_950628_chaptered.pdf

Planned update to CA MUTCD policy, **Section 2H.02 General Information Signs (I Series)**

USING ~~RECLAIMED~~ RECYCLED WATER (S28(CA)) Sign

Standard:
38 **The USING ~~RECLAIMED~~ RECYCLED WATER (S28(CA)) sign shall be placed to identify locations where ~~reclaimed~~ recycled water is being used for irrigating landscaped areas and other maintenance operations. Refer to Department of Transportation's Maintenance Manual Chapter 8, Section 8.45. See Section 1A.11 for information regarding this publication.**

S28(CA)

CA MUTCD 2014 Edition Action Items:

- **Section 2H.02** (Page 546) Update policy language in subheading and paragraph 38
- ***Figure 2H-1 (CA). General Information and Miscellaneous Information Signs*** (Page 552) replace thumbnail graphic with updated wording on sign
- **Table 2H-1(CA). California General Information Sign Sizes** (Page 557) update sign name reference

Caltrans Traffic Control Devices Branch Website Action Item:

- Post updated sign specification, updated February 6, 2014 on-line at: http://www.dot.ca.gov/hq/traffops/engineering/control-devices/specs/S28.pdf

[1] http://www.dot.ca.gov/hq/LandArch/water_conservation/2014-02-06_Water_Conservation_Memo.pdf

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

S28 (CA)

ENGLISH UNITS

A	B	C	D	E	F
18	12	0.5	1.5	2D	1.5
36	24	0.75	3	4D	1.5
54	36	1	4.5	6D	3

COLORS: BORDER & LEGEND - WHITE (RETROREFLECTIVE)
BACKGROUND - BLUE (RETROREFLECTIVE)

2/06/14

12-20 FHWA's 2009 MUTCD Revisions 1 and 2 –Engineering Judgment & Compliance dates

Caltrans will issue revised CA MUTCD in June 2014. 2014 CA MUTCD will include Revisions 1 and 2 –Engineering Judgment & Compliance dates issued by the federal Highway Administration and all the recommendations made by the CTCDC from 2012 through May 14, 2014.

Action Items:

14-15 Proposal to Amend Section 6F.87 Rumble Strips of the CA MUTCD

Recommendation:
Caltrans request that the Committee recommend adoption of the proposed changes needed to use portable transverse rumble strips when flaggers are present within work zones, to reduce speeds and improve safety on high-speed two-lane two-way roadways per the proposal below.

Agency Making Request/Sponsor: Caltrans

Background:
The Caltrans Construction Partnering Steering Committee's Work Zone Safety Task Group and the California Strategic Highway Safety Plan's Challenge Area 14 (SHSP CA#14 - Enhance Work Zone Safety) initiated the effort to evaluate the effectiveness of using portable transverse rumble strips when flaggers are present within work zones to reduce speeds and improve safety on high-speed two-lane two-way roadways. Safety in highway work zones is an area of emphasis for Caltrans (California Department of Transportation). As a result, many improvements to work zone safety are being implemented. One of these improvements is the use of portable transverse rumble strips in advance of flagger stations. If found effective, when these strips are only used on a high-speed two-lane two-way roadway in advance of flagging stations, the Task Group and SHSP CA#14 would recommend to Caltrans to develop statewide traffic control device policies and specifications for the use of portable transverse rumble strips. When finalized, the policies and specifications for this device will help ensure all roadways in California are operated uniformly and consistently, thereby, improving safety of all road users traveling through the work zone and safety of workers.

The current policy in Part 6 (Section 6F.87) of the California MUTCD by inclusion, considers the transverse rumble strip as a temporary traffic control device which can be used in the work zone. It describes the design characteristics, applicability, and location criteria of this device in a very broad range of conditions for situations commonly encountered. The policy is inadequate as it does not identify the various situations where the transverse rumble strip would be beneficial in attracting driver's attention to work zone features to improve safety. The policy also lacks the specific criteria needed for a new device, unfamiliar to road users, risking basic considerations of uniformity and standardization of general principles if used solely on the discretion of the agency. Uniformity means treating similar situations in a similar way.

The current CA MUTCD policy (Section 6F.87 titled "Rumble Strips") is inadequate for field application of the device and lacks the following:
- Information on the use of temporary rumble strip types and configurations for work zones;
- Benefits and limitations of rumble strips in various situations or conditions;
- Doesn't include when and how to implement temporary rumble strips in work zones;
- Key aspects to consider before and during implementation; and
- Information on reference materials for use when encountering complex, unusual or confusing work zone situations.

Temporary traffic control (TTC) countermeasures should be used to increase drivers' alertness and to provide advance warning of changing conditions within the work zones. Even though other warning devices such as warning signs, portable changeable message signs, arrow panels, temporary pavement markings, etc. may be sufficient to guide drivers through work zones, a stronger and timelier response can be achieved by combining audible and tactile stimuli to improve driver compliance; this would be a useful addition to other TTC devices when drivers may be inattentive or misperceive the upcoming conditions.

Rumble strips are a countermeasure that provides both an audible warning and physical vibration to alert motorists as the vehicle tires traverse the rumble strips. Because there is no specific message associated with rumble strips, they can be used to alert motorists to a variety of conditions. CA MUTCD indicates that transverse rumble strips, which extend across the travel lanes, are intended to notify road users of upcoming hazards or changes in roadway features, such as unexpected changes in alignment, and conditions requiring a reduction in speed and/or a stop. This could encompass a variety of situations such as lane closures, speed reductions, changes in alignment, new merge patterns, visual obstructions, nighttime work zones, and more. The circumstances and restrictions of work zones can vary greatly, and transverse rumble strips can alert drivers to the changing conditions and information being provided by TTC devices. Due to the temporary nature of work zones, a need exists for rumble strips that can be installed and removed quickly and efficiently while providing the same auditory and tactile warnings to drivers as permanent rumble strips.

FHWA and ATSSA have jointly issued a guideline titled "Guidance for the Use of Temporary Rumble Strips in Work Zones" dated September 2013. This document provides practitioners with information on the use of temporary rumble strips to increase the safety of work zones.
Please refer to the following web link for this document:
http://www.workzonesafety.org/fhwa_wz_grant/atssa/atssa_temporary_rumble_strips
This revised policy provides additional details on the specific type of TTC operation in the work zone and the roadway characteristics for when the portable transverse rumble strips can be beneficial. It provides details on color, height, width, length, weight and adhesive. Further, it provides additional guidelines for flagging operation and describes the number of arrays, single group and set, the gap between adjacent strips as well as location of each array in conjunction with existing advance warning sign packages with distances A, B and C. It also includes displacement tolerances requiring relocation by the contractor. A new sign "RUMBLE STRIPS" is being proposed as part of the revised policy.

Attachments:
1. SHSP Action Approval Form
2. FHWA and ATSSA guideline titled "Guidance for the Use of Temporary Rumble Strips in Work Zones" dated September 2013 reference.
3. California MUTCD 2012 Revised Policy (Temporary Transverse Rumble Strips in TTC zones)

Attachments are posted on the CTCDC website at the following Link with Amended Agenda:

http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/agenda.htm

Please note:
- **Black text is existing National MUTCD policy from FHWA that has been adopted for use in California and is the current policy.**
- **Black crossed out text is existing National MUTCD policy from FHWA that has NOT been adopted for use in California.**
- **Blue text is current and existing California created policy.**
- **Red text is the proposed changes to current policy as per this proposal.**

PROPOSAL:

Section 6F.87 Rumble Strips

Support:

01 Transverse rumble strips consist of intermittent, narrow, transverse areas of rough-textured or slightly raised or depressed road surface that extend across the travel lanes to alert drivers to unusual vehicular traffic conditions. Through noise and vibration they attract the driver's attention to such features as unexpected changes in alignment and to conditions requiring a stop.

02 Longitudinal rumble strips consist of a series of rough-textured or slightly raised or depressed road surfaces located along the shoulder to alert road users that they are leaving the travel lanes.

Standard:

03 **If it is desirable to use a color other than the color of the pavement for a longitudinal rumble strip, the color of the rumble strip shall be the same color as the longitudinal line the rumble strip supplements.**

04 ~~**If the**~~ **The color of a transverse rumble strip used within a travel lane** ~~**is not the color of the pavement, the color of the rumble strip**~~ **shall be** ~~**white,**~~ **black, or orange.**

The height of the transverse rumble strip shall be from 5/8 to 3/4 inch, including the height of adhesives, if used.

The width of each transverse rumble strip shall not be less than 12 inches, nor more than 13 inches.

Each transverse rumble strip shall be at least 10 feet long and shall have a minimum weight of 105 lbs.

Option:

05 Intervals between transverse rumble strips may be reduced as the distance to the approached conditions is diminished in order to convey an impression that a closure speed is too fast and/or that an action is imminent. A RUMBLE STRIPS (WXX(CA)) sign warning drivers of the onset of rumble strips may be placed in advance of any transverse rumble strip installation.

Guidance:

06 *Transverse rumble strips should be placed transverse to vehicular traffic movement. They should not adversely affect overall pavement skid resistance under wet or dry conditions.*

07 *In urban areas, even though a closer spacing might be warranted, transverse rumble strips should be designed in a manner that does not promote unnecessary braking or erratic steering maneuvers by road users.*

08 *Transverse rumble strips should not be placed on sharp horizontal or vertical curves.*

09 *Rumble strips should not be placed through pedestrian crossings or on bicycle routes.*

~~10 *Transverse rumble strips should not be placed on roadways used by bicyclists unless a minimum clear path of 4 feet is provided at each edge of the roadway or on each paved shoulder as described in AASHTO's "Guide to the Development of Bicycle Facilities" (see Section 1A.11).*~~

~~11 *Longitudinal rumble strips should not be placed on the shoulder of a roadway that is used by bicyclists unless a minimum clear path of 4 feet is also provided on the shoulder.*~~

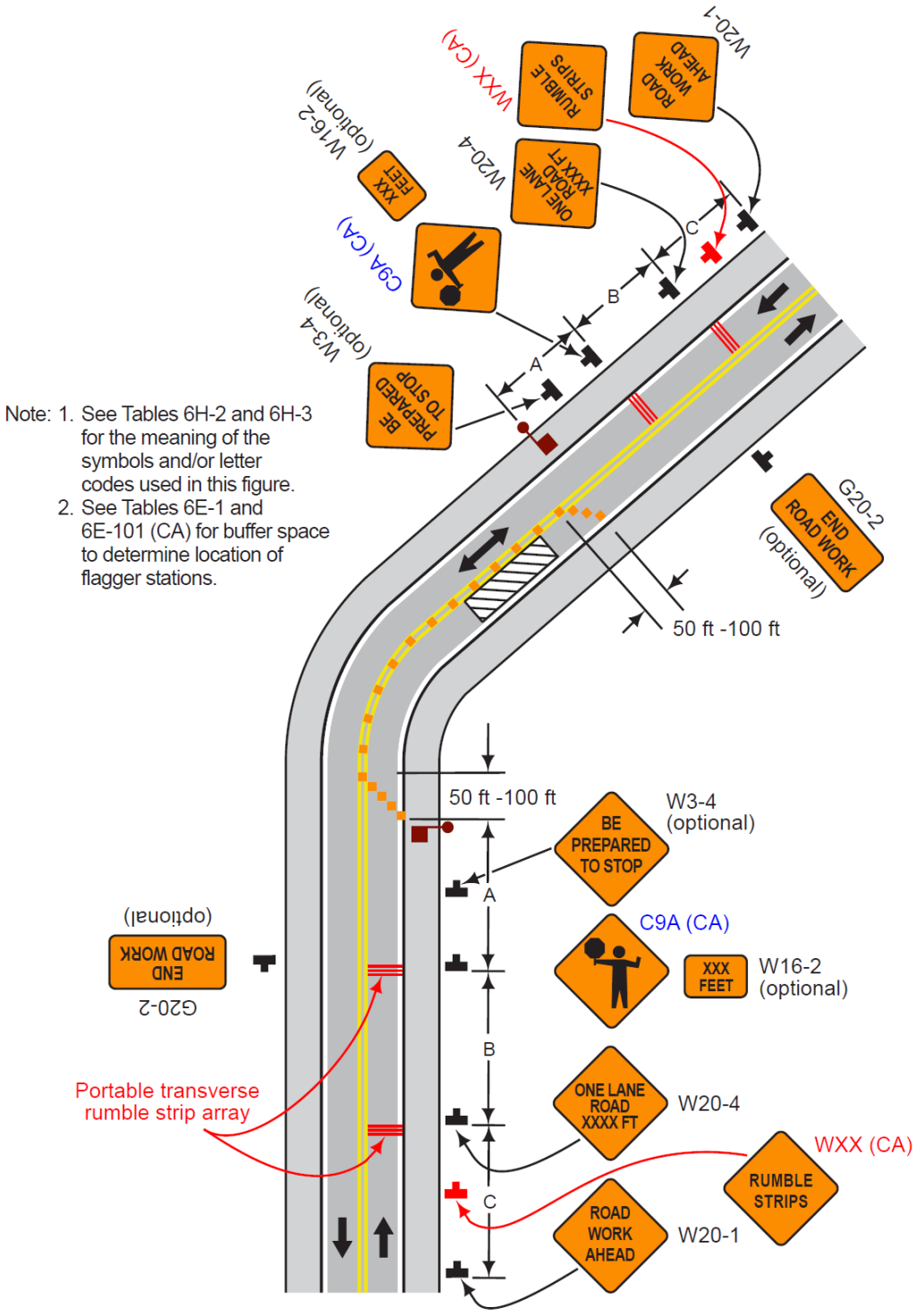
If used for flagging operation, 2 arrays (1 array is a single group or set) of portable transverse rumble strips should be placed transverse to the vehicular traffic movement in advance of and approach to each flagger station. Each array should consist of 3 rumble strips spaced no less 6 feet and no more than 10 feet apart. The 1st array should be placed adjacent to the ONE LANE ROAD AHEAD (W20-4) sign and the 2nd array should be placed adjacent to the California Flagger symbol (C9A(CA)) sign.

The RUMBLE STRIPS (WXX(CA)) sign should be placed half way between the ROAD WORK AHEAD (W20-1) sign and the ONE LANE ROAD AHEAD (W20-4).

Standard:

If the portable transverse rumble strips become out of alignment (skewed) by more than 6 inches, measured from one end to the other, they shall be readjusted to bring the placement back to the original location.

Figure 6H-10A (CA). Lane Closure on Two-Lane Road Using Flaggers (TA-10A)
Using Portable Transverse Rumble Strips



Typical Application 10

14-16 Amendments to various Sections/Figures of Part 2 Signs of the CA MUTCD 2012 based on Public Comments

Recommendation: Caltrans requests that the CTCDC make recommendations for the adoption of the Part 2 Sections/Figures as amended under the proposal.

Requesting and Sponsoring Agency: Caltrans

Background: Proposed amendments are based on the comments made by individuals during the CA MUCTD 2012 adoption process. These comments were reviewed and discussed in the CTCDC Workshops. Only those Sections have amended which were agreed by the Workshop technical committee**.**

Proposal:

CA MUTCD Part 2 Proposed Amendments from 2011 Draft Public Comments and CTCDC Workshop Resolution

Item #	CA MUTCD Section		CA MUTCD Page #	Public Comment & Specific Recommendation(s)	Commenter	CTCDC Workshop Resolution
1	2A.07	Table 2A-1	110 - 111	In regards to 2A.07 I was wondering i[f] Caltrans found any data in which to elinate the use of illuminated YIELD signs or white LEDs in general (which would elininate the use of an illumnated R2-1 Speed Limit Sign. We feel the speed limits illuminated signs especially have been very effective in the field as a less expensive option to a driver feedback sign.	Bryan Everard TAPCO	Update CA language to allow regulatory and warning signs to have LED's in borders
			110	* Para 06a, delete "~~a STOP~~" and replace with "regulatory"		
			110	* Undelete strikethroughs in Para 08, lines A., B. and F.		
			111	* Undelete strikethrough in Para 11.		
			128	* Table 2A-1, edit CA-only language to read: • Border of regulatory or warning signs		
2	2B.37		165 -166	Need to replace [undelete] the federal standard [as it is] not clear. The federal language apperas to be more broadly applicable.	Steve Pyburn FHWA	Undelete paragraphs 01 thru 05
			165	* Undelete paragraphs 01-04.		
			166	* Undelete paragraphs 05.		
3	2J.07		598	Reason for this deletion is not clear. Without good justification, keep the standard.	Steve Pyburn FHWA	Undelete paragraphs 01 thru 05
			598	* Undelete Para 01.		
4	2E.31	Table 2E-1(CA) & figures 2E-22(CA) and 2E-26(CA)	410-412, 443, 446 & 468	The California style of half-width exit tabs that are either inset into the main sign or above it but on the same sign body (G83-4, G83-5, G85-10, G85-11) looks awful. Please, as is the practice in other states, use either a separate tab above the main sign or a full-width tab that is part of the main sign to avoid the expanse of green that is not within a border.	Eric Fischer	Delete G83-4(CA) and G85-10(CA) sign specifications and references in CA MUTCD that have the "green space" in corner of sign
 G83-4 (CA)			411	* Delete paragraph 36.		
			411	* Amend paragraph 37 to read:		
			411	Option: 37 The Exit Numbered Advance Guide (G83-5(CA)) sign with a single border may be used ~~as an alternate to the G83-4(CA)~~ when the sign message requires additional space on the sign.		
			411	**Standard:** 38 **If used, the ~~G83-4(CA) and~~ G83-5(CA) sign~~s~~ shall be placed on freeways to give motorists advance notice of the exit point to the principal destination served by the next interchange that has been assigned an exit number/suffix, and the distance to that interchange.**		
			468	* Delete "Exit Numbered Advance Guide, G83-4(CA)" reference in Table 2E-1(CA)		

CA MUTCD Part 2 Proposed Amendments from 2011 Draft Public Comments and CTCDC Workshop Resolution

Item #	CA MUTCD Section		CA MUTCD Page #	Public Comment & Specific Recommendation(s)	Commenter	CTCDC Workshop Resolution
	 G85-10 (CA)		410	* Delete reference to G85-10(CA) in Para 20.		
			412	* Delete Para 44.		
			412	* Amend Para 45 to read:		
			412	Option: 45 The Exit Numbered Exit Direction (G85-11(CA)) sign with a single border may be used ~~as an alternate to the G85-10(CA) sign~~ when the sign message requires additional space on the sign.		
			412	**Standard:** **46 If used, the ~~G85-10(CA) and~~ G85-11(CA) sign~~s~~ shall be placed on freeways to direct motorists to the exit ramp of an interchange that has been assigned an exit number/suffix.**		
			412	* Delete reference to G85-10(CA) in Para 47.		
			468	* Delete "Exit Numbered Exit Direction, G85-10(CA)" reference in Table 2E-1(CA)		
			443 & 446	* Delete G83-4(CA) & G85-10(CA) from figures 2E-22(CA) and 2E-26(CA)		
5	*(was)* Figure 2E-39 (CA)	Figure 2B-18 (CA)	Pages 224-227	**Figure 2E-39(CA) Freeway Entrance Sign packages ("Totem Poles")** All Figure 2E-39 examples must be revised by placing the M3 series sign panels ABOVE the route marker. Draft Section 2D.15 standard clearly states "If use, the Cardinal Direction auxilary sign shall be mounted directly above a route sign or an auxiliary sign for an alternative route."	Ralph Herman	Make necessary revisions to show the cardinal direction auxiliary sign on top of the sign assembly
		Sheet 2 of 5	224	* Relocate NORTH Cardinal Direction panel on top of the 4 sign assemblies, shown		
		Sheet 3 of 5	225	* Relocate NORTH Cardinal Direction panel on top of the 4 sign assemblies, shown		
		Sheet 4 of 5	226	* Relocate NORTH Cardinal Direction panel on top of the 2 sign assemblies, shown		
		Sheet 5 of 5	227	* Relocate NORTH Cardinal Direction panel on top of the 4 sign assemblies, shown		

Guidance:

15 *Unless otherwise provided in this Manual for a specific sign, and except as provided in Paragraph 16, telephone numbers of more than four characters should not be displayed on any sign, supplemental plaque, sign panel (including logo sign panels on specific service signs), or changeable message sign.*

Option:

16 Internet addresses, e-mail addresses, or telephone numbers with more than four characters may be displayed on signs, supplemental plaques, sign panels, and changeable message signs that are intended for viewing only by pedestrians, bicyclists, occupants of parked vehicles, or drivers of vehicles on low-speed roadways where engineering judgment indicates that an area is available for drivers to stop out of the traffic flow to read the message.

Standard:

17 **Pictographs (see definition in Section 1A.13) shall not be displayed on signs except as specifically provided in this Manual. Pictographs shall be simple, dignified, and devoid of any advertising. When used to represent a political jurisdiction (such as a State, county, or municipal corporation) the pictograph shall be the official designation adopted by the jurisdiction. When used to represent a college or university, the pictograph shall be the official seal adopted by the institution. Pictorial representations of university or college programs shall not be permitted to be displayed on a sign.**

Section 2A.07 Retroreflectivity and Illumination

Support:

01 There are many materials currently available for retroreflection and various methods currently available for the illumination of signs and object markers. New materials and methods continue to emerge. New materials and methods can be used as long as the signs and object markers meet the standard requirements for color, both by day and by night.

Standard:

02 **Regulatory, warning, and guide signs and object markers shall be retroreflective (see Section 2A.08) or illuminated to show the same shape and similar color by both day and night, unless otherwise provided in the text discussion in this Manual for a particular sign or group of signs.**

03 **The requirements for sign illumination shall not be considered to be satisfied by street or highway lighting.**

Option:

04 Sign elements may be illuminated by the means shown in Table 2A-1.

05 Retroreflection of sign elements may be accomplished by the means shown in Table 2A-2.

06 ~~Light Emitting Diode (LED) units may be used individually within the legend or symbol of a sign and in the border of a sign, except for changeable message signs, to improve the conspicuity, increase the legibility of sign legends and borders, or provide a changeable message.~~

06a Light Emitting Diode (LED) units may be used in the border of ~~a STOP~~ regulatory or warning signs, except for Changeable Message Signs, to improve the conspicuity of signs.

Standard:

07 **Except as provided in Paragraphs 11 and 12, neither individual LEDs nor groups of LEDs shall be placed within the background area of a sign.**

08 **If used, the LEDs shall have a maximum diameter of 1/4 inch and shall be the following colors based on the type of sign:**

A. White or red, if used with STOP or YIELD signs.
B. White, if used with regulatory signs other than STOP or YIELD signs.
C. ~~White or~~ yellow, if used with warning signs.
~~D. White, if used with guide signs.~~
E. ~~White,~~ yellow, or orange, if used with temporary traffic control signs of warning type.
F. White or yellow, if used with school area signs.

09 **If flashed, all LED units shall flash simultaneously at a rate of more than 50 and less than 60 times per minute.**

10 **The uniformity of the sign design shall be maintained without any decrease in visibility, legibility, or driver comprehension during either daytime or nighttime conditions.**

Option:

11 For STOP and YIELD signs, LEDs may be placed within the border or within one border width within the background of the sign.

12 For STOP/SLOW paddles (see Section 6E.03) used by flaggers and the STOP paddles (see Section 7D.05) used by adult crossing guards, individual LEDs or groups of LEDs may be used.

Support:

13 Other methods of enhancing the conspicuity of standard signs are described in Section 2A.15.

14 Information regarding the use of retroreflective material on the sign support is contained in Section 2A.21.

Section 2A.08 Maintaining Minimum Retroreflectivity

Support:

01 Retroreflectivity is one of several factors associated with maintaining nighttime sign visibility (see Section 2A.22).

Standard:

02 **Public agencies or officials having jurisdiction shall use an assessment or management method that is designed to maintain sign retroreflectivity at or above the minimum levels in Table 2A-3.**

Support:

03 Compliance with the Standard in Paragraph 2 is achieved by having a method in place and using the method to maintain the minimum levels established in Table 2A-3. Provided that an assessment or management method is being used, an agency or official having jurisdiction would be in compliance with the Standard in Paragraph 2 even if there are some individual signs that do not meet the minimum retroreflectivity levels at a particular point in time.

Guidance:

04 *Except for those signs specifically identified in Paragraph 6, one or more of the following assessment or management methods should be used to maintain sign retroreflectivity:*

A. *Visual Nighttime Inspection—The retroreflectivity of an existing sign is assessed by a trained sign inspector conducting a visual inspection from a moving vehicle during nighttime conditions. Signs that are visually identified by the inspector to have retroreflectivity below the minimum levels should be replaced.*
B. *Measured Sign Retroreflectivity—Sign retroreflectivity is measured using a retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.*
C. *Expected Sign Life—When signs are installed, the installation date is labeled or recorded so that the age of a sign is known. The age of the sign is compared to the expected sign life. The expected sign life is based on the experience of sign retroreflectivity degradation in a geographic area compared to the minimum levels. Signs older than the expected life should be replaced.*
D. *Blanket Replacement—All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest-life material used on the affected signs.*
E. *Control Signs—Replacement of signs in the field is based on the performance of a sample of control signs. The control signs might be a small sample located in a maintenance yard or a sample of signs in the field. The control signs are monitored to determine the end of retroreflective life for the associated signs. All field signs represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach the minimum levels.*
F. *Other Methods—Other methods developed based on engineering studies can be used.*

Support:

05 Additional information about these methods is contained in the 2007 Edition of FHWA's "Maintaining Traffic Sign Retroreflectivity" (see Section 1A.11).

Table 2A-1. Illumination of Sign Elements

Means of Illumination	Sign Element to be Illuminated
Light behind the sign face	• Symbol or word message • Background • Symbol, word message, and background (through a translucent material)
Attached or independently mounted light source designed to direct essentially uniform illumination onto the sign face	• Entire sign face
Light emitting diodes (LEDs)	• Border of ~~STOP~~ regulatory or warning signs • ~~Symbol or word message~~ • ~~Portions of the sign border~~
Other devices, or treatments that highlight the sign shape, color, or message: Luminous tubing Fiber optics Incandescent light bulbs Luminescent panels	• Symbol or word message • Entire sign face

Change added bullet to read:

* Border of regulatory or warning signs

Table 2A-2. Retroreflection of Sign Elements

Means of Retroreflection	Sign Element
Reflector "buttons" or similar units	Symbol Word message Border
A material that has a smooth, sealed outer surface over a microstructure that reflects light	Symbol Word message Border Background

Section 2B.35 Slow Vehicle Turn-Out Signs (R4-12, R4-13, and R4-14)

Support:

01 On two-lane highways in areas where traffic volumes and/or vertical or horizontal curvature make passing difficult, turn-out areas are sometimes provided for the purpose of giving a group of faster vehicles an opportunity to pass a slow-moving vehicle.

~~Option:~~

Standard:

02 **A SLOW VEHICLES WITH ~~XX~~ 5 OR MORE FOLLOWING VEHICLES MUST USE TURN-OUT (R4-12) sign (see Figure 2B-10) ~~may~~ shall be installed in advance of a the first turn-out area to inform drivers who are driving so slow that they have accumulated a specific number of vehicles behind them that they are required by the traffic laws of that State to use the turn-out to allow the vehicles following them to pass. Refer to CVC 21656.**

Support:

03 The specific number of vehicles displayed on the R4-12 sign provides law enforcement personnel with the information they need to enforce this regulation.

03a Refer to CVC 21656 for Turning out of Slow-Moving Vehicles.

03b The R4-12 sign is not intended to be used in advance of each individual turnout.

03c See Section 3B.101(CA) for more details.

Option:

04 If an R4-12 sign has been installed in advance of a turn-out area, a SLOW VEHICLES MUST USE TURN-OUT AHEAD (R4-13) sign (see Figure 2B-10) may also be installed downstream from the R4-12 sign, but upstream from the turn-out area, to remind slow drivers that they are required to use a turn-out that is a short distance ahead.

Standard:

05 **If an R4-12 sign has been installed in advance of a turn-out area, a SLOW VEHICLES MUST TURN OUT (with arrow) (R4-14) sign (see Figure 2B-10) shall be installed at the entry point of the turn-out area.**

Support:

06 Section 2D.52 contains information regarding advance information signs for slow vehicle turn-out areas.

Section 2B.36 DO NOT DRIVE ON SHOULDER Sign (R4-17) and DO NOT PASS ON SHOULDER Sign (R4-18)

Option:

01 The DO NOT DRIVE ON SHOULDER (R4-17) sign (see Figure 2B-10) may be installed to inform road users that using the shoulder of a roadway as a travel lane is prohibited.

02 The DO NOT PASS ON SHOULDER (R4-18) sign (see Figure 2B-10) may be installed to inform road users that using the shoulder of a roadway to pass other vehicles is prohibited.

Section 2B.37 DO NOT ENTER Sign (R5-1)

What is shown in red was deleted, but is proposed to be undeleted

Standard:

01 **The DO NOT ENTER (R5-1) sign (see Figure 2B-11) shall be used where traffic is prohibited from entering a restricted roadway.**

Guidance:

02 *The DO NOT ENTER sign, if used, should be placed directly in view of a road user at the point where a road user could wrongly enter a divided highway, one-way roadway, or ramp (see Figure 2B-12). The sign should be mounted on the right-hand side of the roadway, facing traffic that might enter the roadway or ramp in the wrong direction.*

03 *If the DO NOT ENTER sign would be visible to traffic to which it does not apply, the sign should be turned away from, or shielded from, the view of that traffic.*

Option:

04 The DO NOT ENTER sign may be installed where it is necessary to emphasize the one-way traffic movement on a ramp or turning lane.

What is shown in red was deleted, but is proposed to be undeleted

05 A second DO NOT ENTER sign on the left-hand side of the roadway may be used, particularly where traffic approaches from an intersecting roadway (see Figure 2B-12).

Support:

06 Section 2B.41 contains information regarding an optional lower mounting height for DO NOT ENTER signs that are located along an exit ramp facing a road user who is traveling in the wrong direction.

Standard:

07 **The DO NOT ENTER (R5-1) sign and WRONG WAY (R5-1a) sign shall be used at the exit end of a one-way road or ramp to inform motorists that an entrance thereto is prohibited.**

08 **The R5-1 and the R5-1a signs shall be placed in the head-on position to a wrong-way movement.**

Option:

09 The DO NOT ENTER (R5-1) and WRONG WAY (R5-1a) signs (see Figure 2B-11), may be used as Activated Blank-Out signs (see Figure 2B-11(CA)) for controlling reversible lanes and for prohibiting turns into reversible lanes.

10 The R5-1 and R5-1a Activated Blank-Out signs may also be used to supplement static R5-1 and R5-1a signs.

Standard:

11 **If used for controlling reversible lanes and for prohibiting turns into reversible lanes, the R5-1 and R5-1a Activated Blank-Out signs shall be used in two sets.**

Guidance:

12 *At least one set of R5-1 and R5-1a signs should be visible from each decision point on each likely wrong-way approach.*

Support:

13 See section 2E.53 for wrong-way traffic control at interchange ramps and Figures 2B-12(CA) and 3B-14(CA) for examples of signs and lane reduction markings.

Guidance:

14 *On multilane roadways, a minimum size of 36 x 36 inch should be used for the DO NOT ENTER (R5-1) sign.*

15 *At intersections where the left-turn lane treatment results in channelized offset left-turn lanes (e.g., a parallel or tapered left-turn lane between two medians), the size of the DO NOT ENTER (R5-1) sign or WRONG WAY (R5-1a) sign, if used, should be of the next higher roadway classification, if feasible, as shown in Table 2B-1, to reduce the potential for wrong-way maneuvers by drivers turning left from a stop-controlled, intersecting minor roadway.*

16 *Hence, per this offset left-turn lanes scenario, if the type of roadway is a conventional road, the R5-1 sign size used, if feasible, should be from the expressway column as 36 x 36 inch, not the 30 x 30 inch size in the conventional road column.*

Section 2B.38 WRONG WAY Sign (R5-1a)

~~Option:~~

~~01 The WRONG WAY (R5-1a) sign (see Figure 2B-11) may be used as a supplement to the DO NOT ENTER sign where an exit ramp intersects a crossroad or a crossroad intersects a one-way roadway in a manner that does not physically discourage or prevent wrong-way entry (see Figure 2B-12).~~

~~*Guidance:*~~

~~02 *If used, the WRONG WAY sign should be placed at a location along the exit ramp or the one-way roadway farther from the crossroad than the DO NOT ENTER sign (see Section 2B.41).*~~

Support:

03 Section 2B.41 contains information regarding an optional lower mounting height for WRONG WAY signs that are located along an exit ramp facing a road user who is traveling in the wrong direction.

Support:

04 Refer to Section 2B.37 for the WRONG WAY (R5-1a) sign.

Section 2B.39 Selective Exclusion Signs

Support:

01 Selective Exclusion signs (see Figure 2B-11) give notice to road users that State or local statutes or ordinances exclude designated types of traffic from using particular roadways or facilities.

Standard:

02 **If used, Selective Exclusion signs shall clearly indicate the type of traffic that is excluded.**

Guidance:

02 *Any legend on a symbol/trademark should be proportional to the size of the symbol/trademark.*

Section 2J.06 Signs at Interchanges

Standard:

01 **The Specific Service signs shall be installed between the preceding interchange and at least 800 feet in advance of the Exit Direction sign at the interchange from which the services are available (see Figure 2J-2).**

Guidance:

02 *There should be at least an 800 foot spacing between the Specific Service signs, except for Specific Service ramp signs. However, excessive spacing is not desirable. Specific Service ramp signs should be spaced at least 100 feet from the Exit Gore sign, from each other, and from the ramp terminal.*

Standard:

03 **Specific Service signs shall be located between the previous interchange and sufficiently in advance of the approaching interchange so that the last sign is at least 0.25 mile in advance of the gore of the approaching interchange with at least 800 foot spacing between all Specific Service signs and between Specific Service signs and guide signs. Refer California Code of Regulations, Title 21, Division 2, Chapter 19, Section 2108(a).**

Option:

04 At the discretion of the Department of Transportation, the location of the Specific Service signs with respect to their distances from the gore may be increased to avoid conflict with existing guide signs.

Section 2J.07 Single-Exit Interchanges

What is shown in red was deleted, but is proposed to be undeleted

Standard:

01 **At numbered single-exit interchanges, the name of the service type followed by the exit number shall be displayed on one line above the logo sign panels. At unnumbered interchanges, the directional legend NEXT RIGHT (LEFT) shall be used.**

02 **At single-exit interchanges, Specific Service ramp signs shall be installed along the ramp or at the ramp terminal for facilities that have logo sign panels displayed along the main roadway if the facilities are not readily visible from the ramp terminal. Directions to the service facilities shall be indicated by arrows on the ramp signs. Logo sign panels on Specific Service ramp signs shall be duplicates of those displayed on the Specific Service signs located in advance of the interchange, but shall be reduced in size (see Paragraph 6 of Section 2J.04).**

Guidance:

03 *Specific Service ramp signs should include distances to the service facilities.*

Option:

04 An exit number plaque (see Section 2E.31) may be used instead of the exit number on the signs located in advance of an interchange.

Standard:

05 **The Single-Exit Interchange (One Service) Mainline sign (SG42-1(CA)) shall be used for the Specific Service Signing Program (Logo Program) where there are at least four qualified facilities available with the possibility of more.**

06 **The Single-Exit Interchange (One Service) Mainline sign (SG42-2(CA)) shall be used for the Specific Service Signing Program (Logo Program) where there are one or two qualified facilities available and it is not likely that there will be more than three.**

07 **At numbered interchanges, the name of the service type followed by the appropriate exit number shall be displayed on one line above the logo panels for SG42-1(CA) and SG42-2(CA) signs.**

Option:

08 At unnumbered interchanges, the directional legend NEXT RIGHT (LEFT), SECOND RIGHT (LEFT), NEXT EXIT, or SECOND EXIT may be used in place of the exit number for SG42-1(CA) and SG42-2(CA) signs.

Standard:

09 **The Single-Exit Interchange (Two Services) Mainline sign (SG42-6(CA)) shall be used for the Specific Service Signing Program (Logo Program) where there are a limited number of services, three or four, in remote rural areas.**

city or town. Figure 2E-20 shows a loop route, which is a route that departs from a mainline route and then rejoins the same mainline route at a subsequent point downstream, and a spur route, which is a route that departs from a mainline route and never rejoins the same mainline route. Figure 2E-21 shows two mainline routes that overlap each other.

Standard:

11 **Regardless of whether a mainline route originates within a State or crosses into a State from another State, the southernmost or westernmost terminus within that State shall be the beginning point for interchange numbering.**

12 **For circumferential routes, interchange numbering shall be in a clockwise direction. The numbering shall begin with the first interchange west of the south end of an imaginary north-south line bisecting the circumferential route, at a radial freeway or other Interstate route, or some other conspicuous landmark in the circumferential route near a south polar location (see Figure 2E-19).**

13 **The interchange numbers on loop routes shall begin at the loop interchange nearest the south or west mainline junction and increase in magnitude toward the north or east mainline junction (see Figure 2E-20).**

14 **Spur route interchanges shall be numbered in ascending order starting at the interchange where the spur leaves the mainline route (see Figure 2E-20).**

15 **If a circumferential, loop, or spur route crosses State boundaries, the numbering sequence shall be coordinated by the States to provide continuous interchange numbering.**

16 **Where numbered routes overlap, continuity of interchange numbering shall be established for only one of the routes (see Figure 2E-21). If one of the routes is an Interstate and the other route is not an Interstate, the Interstate route shall maintain continuity of interchange numbering.**

Guidance:

17 *The route chosen for continuity of interchange numbering should also have reference location sign continuity (see Figure 2E-21).*

Standard:

18 **The Department of Transportation shall utilize mileage based interchange exit numbering to identify the location of each interchange exit on the California Freeway System. The following web site shall provide the statewide listing of freeway exit numbers indexed by route and direction:**

http://www.dot.ca.gov/hq/traffops/signtech/calnexus/index.htm

19 **The placement and location of interchange exit numbering on State highways shall conform to the database maintained by Department of Transportation's Division of Traffic Operations for reference posts. This database is different from the TASAS Highway database.**

20 **Interchange numbering shall be used in signing each freeway interchange exit. Each freeway interchange exit shall include a minimum of two numbered exit signs:**

1. **One Advance Guide (G83(CA) Series) sign with exit number.**
2. **One Exit Gore (E5-1 or G84-2(CA) or G84-3(CA)) sign with exit number and arrow or, if not available, an exit number shall be installed on an adjacent Exit Direction (~~G85-10(CA) or~~ G85-11(CA)) sign at the gore.**

21 **To the extent practical, interchange exit numbers shall be displayed with each Advance Guide sign, Exit Direction sign, and Gore sign on freeways.**

22 **Exit numbers shall not include the cardinal initials corresponding to the directions of the cross route.**

Guidance:

23 *The exit number signs should take advantage of existing roadside and overhead signs. Where possible, add-on plaques or panels should be used. In areas where maximum wind loads or existing legends do not permit placement of an add-on plaque or panel, a new sign should be installed.*

Support:

24 For new sign installations or if the existing sign is due for replacement, consider ordering a new sign with the exit number included as part of the sign.

Standard:

25 **Rest areas, vista points, weigh stations, HOV facility exits or HOV to HOV system connector ramps are not considered interchange exits and shall not be signed with exit numbers.**

Support:

26 Where one or more lanes of traffic diverge from the main line at a single exit, the exit is numbered and signed at the main line diverge as one exit. Generally, there is adequate information displayed on guide signs downstream of the main line diverge to direct a road user to the desired destination, route or street.

Option:

27 A multiple exit number add-on sign (such as E1-5 with message EXITS 33 A-B in Figure 2E-22) may be placed at the mainline diverge.

Guidance:

28 *The multiple exit number add-on sign should only be placed when further clarification is needed to guide road users to the desired destination.*

Standard:

29 **If multiple exit number add-on sign is used, exit numbers with the appropriate suffix letters shall be placed on guide signs downstream of the mainline diverge.**

Support:

30 Exit numbers are not required for exits from auxiliary lanes, connectors or collector-distributors.

Option:

31 The single line EXIT XX panel (G70-2(CA)) may be attached to an existing Advance Guide sign, Exit Direction sign, or Supplemental Guide sign that identifies an interchange that has been assigned a one or two digit exit number/suffix.

32 The single line EXIT XXXX panel (G70-3(CA)) may be attached to an existing Advance Guide sign, Exit Direction sign, or Supplemental Guide sign that identifies an interchange that has been assigned a three or four digit exit number/suffix.

33 The two line EXIT XX panel (G70-4(CA)) may be used as an alternate to the single line EXIT XX panel (G70-2(CA)) when an existing sign cannot accommodate the single line format. It may be attached to an existing Advance Guide sign, Exit Direction sign, or Supplemental Guide sign that identifies an interchange that has been assigned a one or two digit exit number/suffix.

34 The two line EXIT XXXX panel (G70-5(CA)) may be used as an alternate to the single line EXIT XXXX panel (G70-3(CA)) when an existing sign cannot accommodate the single line format. It may be attached to an existing Advance Guide sign, Exit Direction sign, or Supplemental Guide sign that identifies an interchange that has been assigned a three or four digit exit number/suffix.

Guidance:

35 *The EXIT panels (G70-2(CA), G70-3(CA), G70-4(CA) and G70-5(CA)) should be located toward the top left edge of the sign for a left exit and toward the top right edge for right exits.*

Option:

36 ~~The Exit Numbered Advance Guide (G83-4(CA)) sign with separate borders may be used for new sign installations or as an alternate to retrofitting an existing Advance Guide sign when the existing Advance Guide sign cannot accommodate an add-on plaque or panel.~~

37 The Exit Numbered Advance Guide (G83-5(CA)) sign with a single border may be used ~~as an alternate to the G83-4(CA)~~ when the sign message requires additional space on the sign.

Standard:

38 **If used, the ~~G83-4(CA) and~~ G83-5(CA) sign~~s~~ shall be placed on freeways to give motorists advance notice of the exit point to the principal destination served by the next interchange that has been assigned an exit number/suffix, and the distance to that interchange.**

39 **The Exit Gore (E5-1) sign shall be used at exit ramp gores from expressways, from freeway to freeway connectors, and from collector distributors to identify the exiting point.**

40 **The EXIT XX with Arrow Gore (G84-2(CA)) sign shall be used at exit ramp gores on freeways to identify the exiting point at an interchange that has been assigned a one or two digit exit number/suffix.**

41 **The EXIT XXXX with Arrow Gore (G84-3(CA)) sign shall be used at exit ramp gores on freeways to identify the exiting point at an interchange that has been assigned a three or four digit exit number/suffix.**

Guidance:

42 *On the Exit Gore (E5-1 and G84-2(CA) and G84-3(CA)) signs, the arrow should be aligned to approximate the angle of departure.*

Standard:

43 **The Exit Gore (E5-1 and G84-2(CA) and G84-3(CA)) signs shall be placed in the area between the main roadway and the exit ramp.**

Option:

44 ~~The Exit Numbered Exit Direction (G85-10(CA)) sign with separate borders may be used for new sign installations or as an alternate to retrofitting an existing Exit Direction sign when the existing Exit Direction sign cannot accommodate an add-on plaque or panel.~~

45 The Exit Numbered Exit Direction (G85-11(CA)) sign with a single border may be used ~~as an alternate to the G85-10(CA) sign~~ when the sign message requires additional space on the sign.

Standard:

46 **If used, the ~~G85-10(CA) and~~ G85-11(CA) sign~~s~~ shall be placed on freeways to direct motorists to the exit ramp of an interchange that has been assigned an exit number/suffix.**

Guidance:

47 *The ~~G85-10(CA) and~~ G85-11(CA) sign~~s~~ should be placed in the area at the beginning of the deceleration lane of the exit ramp.*

Option:

48 The Exit Numbered Supplemental Guide (G86-12(CA)) sign with separate borders may be used for new sign installations or as an alternate to retrofitting an existing Supplemental Guide sign (G86(CA) Series) when the existing Supplemental Guide sign cannot accommodate an add-on plaque or panel.

49 The Exit Numbered Supplemental Guide (G86-13(CA)) sign with a single border may be used as an alternate to the G86-12(CA) sign when the sign message requires additional space on the sign.

50 The G86-12(CA) and G86-13(CA) signs may be placed on freeways to give motorists advance notice of the exit point to the principal destination served by the next interchange that has been assigned an exit number/suffix.

Section 2E.32 Interchange Classification

Support:

01 For signing purposes, interchanges are classified as major, intermediate, and minor. The minimum alphabet sizes contained in Tables 2E-2 and 2E-4 are based on this classification. Descriptions of these classifications are as follows:

A. Major interchanges are subdivided into two categories: (a) interchanges with other expressways or freeways, or (b) interchanges with high-volume multi-lane highways, principal urban arterials, or major rural routes where the volume of interchanging traffic is heavy or includes many road users unfamiliar with the area.

B. Intermediate interchanges are those with urban and rural routes not in the category of major or minor interchanges.

C. Minor interchanges include those where traffic is local and very light, such as interchanges with land service access roads. Where the sum of exit volumes is estimated to be lower than 100 vehicles per day in the design year, the interchange is classified as minor.

Section 2E.33 Advance Guide Signs

Support:

01 An Advance Guide sign (see Figure 2E-22 and 2E-22(CA)) gives notice well in advance of the exit point of the principal destinations served by the next interchange and the distance to that interchange.

Guidance:

02 *For major and intermediate interchanges (see Section 2E.32), Advance Guide signs should be placed at 1/2 mile and at 1 mile in advance of the exit with a third Advance Guide sign placed at 2 miles in advance of the exit if spacing permits. At minor interchanges, only one Advance Guide sign should be used. It should be located 1/2 to 1 mile from the exit gore. If the sign is located less than 1/2 mile from the exit, the distance displayed should be to the nearest 1/4 mile. Fractions of a mile, rather than decimals, should be displayed in all cases.*

Standard:

03 **For numbered exits to the left, a left exit number (E1-5bP) plaque (see Figure 2E-22) shall be added to the top left-hand edge of the sign.**

Figure 2E-22 (CA). Examples of Interchange Advance Guide Signs, Exit Number Plaques, and LEFT Plaque

Figure 2E-23. Next Exit Plaques

Figure 2E-26 (CA). Examples of Interchange Exit Direction Signs

Figure 2E-27. Interchange Exit Direction Sign with an Advisory Speed Panel

Exit Direction sign with E13-2 sign panel

Exit Direction sign with E13-2 sign panel and flashing yellow beacons

Table 2E-1(CA). California Freeway or Expressway Guide Sign and Plaque Sizes

Sign or Plaque	Sign Designation	Section	Minimum
Advance Lane Assignment	G20-1(CA)	2D.31	VAR x 30
Advance Lane Assignment	G20-3(CA)	2D.31	VAR x 42
Advance Lane Assignment	G20-5(CA)	2D.31	VAR x 54
Advance Lane Assignment	G20-7(CA)	2D.31	VAR x 60
Interchange Sequence	G23-1(CA)	2E.35, 2E.40	VAR x 90
Interchange Sequence	G23-2(CA)	2E.35, 2E.40	VAR x 100
Interchange Sequence	G23-3(CA)	2E.35, 2E.40	VAR x 100
Interchange Sequence	G23-4(CA)	2E.35, 2E.40	VAR x 100
Interchange Sequence	G23-5(CA)	2E.35, 2E.40	VAR x 120
Interchange Sequence	G23-6(CA)	2E.35, 2E.40	VAR x 90
Pull-Through	G24-1(CA)	2D.03, 2E.12	VAR x 80
Pull-Through	G24-3(CA)	2D.03, 2E.12	VAR x 110
Pull-Through	G24-4(CA)	2D.03, 2E.12	VAR x 120
Pull-Through	G24-5(CA)	2D.03, 2E.12	VAR x 110
Pull-Through	G24-6(GA)	2D.03, 2E.12	VAR x 110
Single Line EXIT XX	G70-2(CA)	2E.31	36 x 12
Single Line EXIT XXXX	G70-3(CA)	2E.31	48 x 12
Two Line EXIT XX	G70-4(CA)	2E.31	24 x 24
Two Line EXIT XXXX	G70-5(CA)	2E.31	36 x 24
Advance Guide	G83-1(CA)	2E.33	VAR x 78
Advance Guide	G83-2(CA)	2E.33	VAR x 110
~~Exit Numbered Advance Guide~~	~~G83-4(CA)~~	~~2E.31, 2E.33~~	~~VAR x 84~~
Exit Numbered Advance Guide	G83-5(CA)	2E.31, 2E.33	VAR x 78
EXIT (XX) with Arrow	G84-2(CA)	2E.31, 2E.33	54 x 48
EXIT (XXX) with Arrow	G84-3(CA)	2E.31, 2E.33	48 x 60
Exit Direction	G85-1(CA)	2D.03, 2E.36	VAR x 78
Exit Direction	G85-2(CA)	2D.03, 2E.36	VAR x 48
Exit Direction	G85-3(CA)	2D.03, 2E.36	VAR x 114
Exit Direction	G85-4(CA)	2D.03, 2E.36	VAR x 138
Exit Direction	G85-5(CA)	2D.03, 2E.36	VAR x 80
Exit Direction	G85-6(CA)	2D.03, 2E.36	VAR x 80
~~Exit Numbered Exit Direction~~	~~G85-10(CA)~~	~~2D.03, 2E31~~	~~VAR x 84~~
Exit Numbered Exit Direction	G85-11(CA)	2D.03, 2E31	VAR x 84
NEXT XX EXITS	G87(CA)	2E.42	VAR x 54
Exit Only	W61A(CA)	2E.24	44 x 20
Exit Only	W61B(CA)	2E.24	44 x 20
Exit Only	W61C(CA)	2E24	84 x 20
Exit Only	W61D(CA)	2E.24	126 x 20
Exit Only	W61E(CA)	2E.24	174 x 20
Only	W61F(CA)	2E.24	84 x 20
Only	W61G(CA)	2E.24	174 x 20
Exit Only	W61H(CA)	2E.24	44 x 20

Figure 2B-18 (CA). Example of Application of Regulatory Signing and Pavement Markings at an Exit Ramp Termination to Deter Wrong-Way Entry (Sheet 2 of 5)

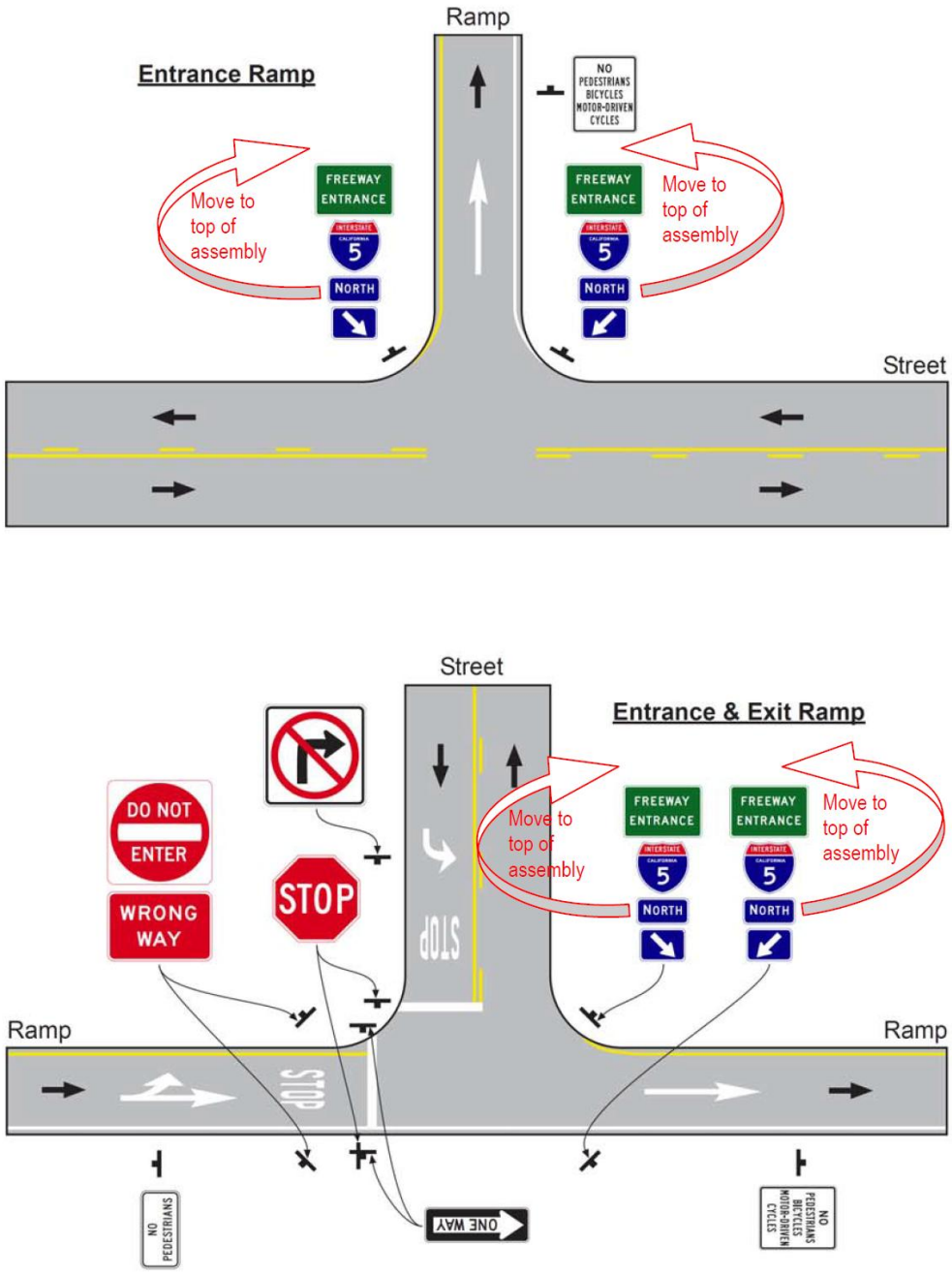


Figure 2B-18 (CA). Example of Application of Regulatory Signing and Pavement Markings at an Exit Ramp Termination to Deter Wrong-Way Entry (Sheet 3 of 5)

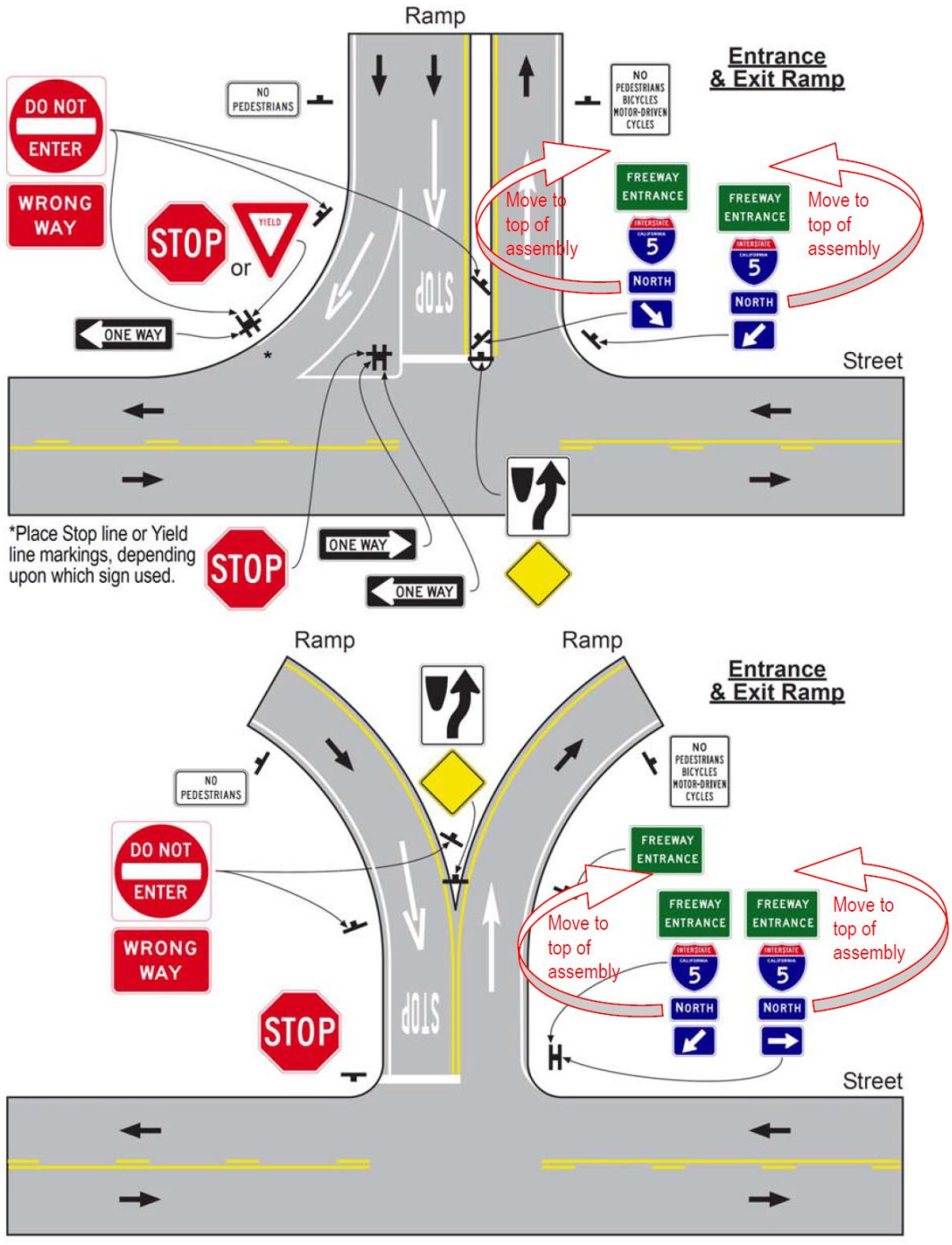


Figure 2B-18 (CA). Example of Application of Regulatory Signing and Pavement Markings at an Exit Ramp Termination to Deter Wrong-Way Entry (Sheet 4 of 5)

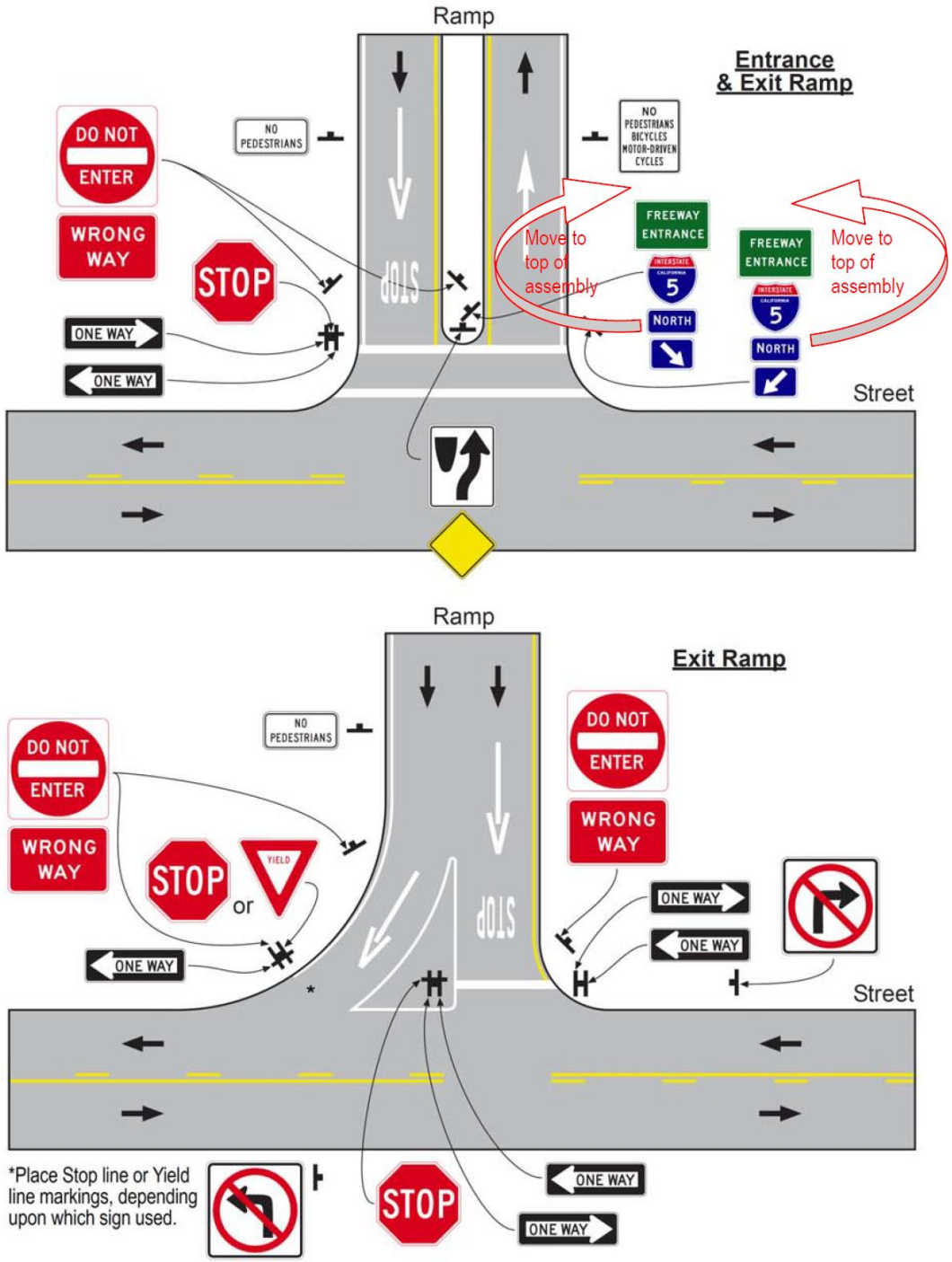
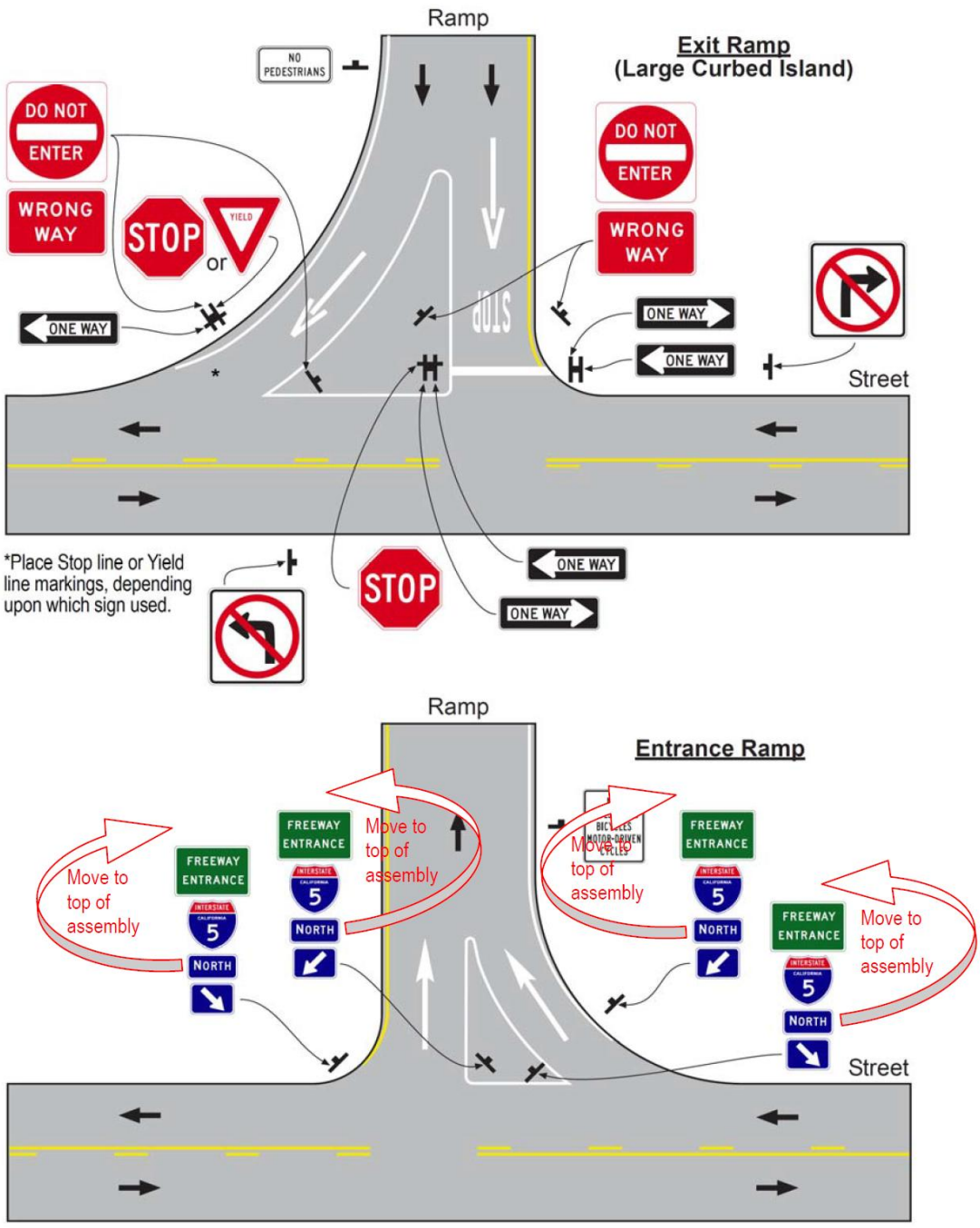


Figure 2B-18 (CA). Example of Application of Regulatory Signing and Pavement Markings at an Exit Ramp Termination to Deter Wrong-Way Entry (Sheet 5 of 5)



10. **Next Meeting:**
11. **Adjourn:**